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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,930	10/05/2003	Nick P. Durso	07-03-0016	2917

7590 04/03/2006

LAW OFFICE OF DAVID HONG
David Hong, Esq.
P.O. Box 2111
Santa Clarita, CA 91386-2111

EXAMINER	
LIANG, REGINA	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 04/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,930	DURSO, NICK P.	
	Examiner	Art Unit	
	Regina Liang	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time ~~may be~~ available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1-8-04, 1-16-04, 10-5-03
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to preliminary amendment filed 11/13/04. Claims 1-10, 12 are currently pending in this application. Claim 11 is cancelled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-10, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by "Troll Touch, Advertisement for "Laptop Touchscreen Enclosure – the Wedge" on or about June 1996, 1 page" (cited by applicant on 1/28/04, hereinafter Troll Touch).

As to claim 1, Troll Touch discloses a structure (laptop touchscreen enclosure) suitable for converting a non-touch screen display into a touch screen display for a computing device comprising: a touch screen; a casing; the casing having an opening for the touch screen; at least one casing surface (see the figure); a controller for the touch screen (see the Product Specifications, "Optional 12-bit controller"); a computing device software driver for the touch screen (inherent having a software driver such as Windows, Mac O/S since computing device is a PC or Macintosh platform laptop); a connection from the controller of the touch screen to the computing device ("USB for PC platform" or "USB for Mac"), whereby the casing is positioned over and substantially around the display for the computing device (see the figure) such that the

touch screen in the casing opening is oriented directly over the display to convert a non-touch screen display to a touch screen display.

As to claim 2, Troll Touch teaches the connection to the computing device is a USB.

As to claim 3, Troll Touch teaches the casing comprising an outer casing surface (surface facing the user) and an inner casing surface (surface facing the display), the outer casing surface and the inner casing surface define a space for the display to fit (see the figure).

As to claim 4, Troll Touch teaches "the product is ... extremely durable ABS plastic construction".

As to claim 5, Troll Touch teaches "the product is available in two models, the standard base as shown in the photo or the extender base" which appears to be a pivotable stand as claimed, see figure.

As to claim 6, note the discussion of claim 1 above. In addition, Troll Touch teaches "the product is available in two models, the standard base as shown in the photo or the extender base" which appears to be a pivotable stand for supporting the casing and the display as claimed, see figure.

As to claim 7, Troll Touch teaches the connection to the computing device is a USB.

As to claim 8, Troll Touch teaches the casing comprising an outer casing surface (surface facing the user) and an inner casing surface (surface facing the display), the outer casing surface and the inner casing surface define a space for the display to fit (see the figure).

As to claim 9, Troll Touch teaches "the product is ... extremely durable ABS plastic construction".

As to claim 10, note the discussion of claims 1 and 3 above.

As to claim 12, Troll Touch teaches "the product is available in two models, the standard base as shown in the photo or the extender base" which appears to be a pivotable stand having a first closed position and a second opened position as claimed, see figure.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kushita (US 6188436) teaches a portable terminal apparatus having handwritten data input means.

Beatty et al (US 5233502) teaches a removable and reversible display device for portable computer.

Kurtzig (EP 0 181 196) teaches a removable touchscreen.

Wakabayashi (JP 2000311059) teaches an input tablet.

Nippondenso (JP 2002023952) teaches a LCD has slit provided to design panel for insertion and removal of touch panel.

Saito et al (JP 06110609) teaches a touch panel type controller.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (571) 272-7693. The examiner can normally be reached on Monday-Friday from 8AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Regina Liang
Primary Examiner
Art Unit 2674

3/31/06

PTO/SB/08B (08-03)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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THIRD

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	10/679,930
Filing Dat	10-05-03
First Named Inventor	Durso
Art Unit	
Examiner Name	
Attorney Docket Number	07-03-0016

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
KL		TROLL TOUCH WEBSITE, 26 pages of printouts from http://www.trolltouch.com.	
		TROLL TOUCH WEBSITE, copy of Macworld article, "Touch Screen Enhances iMac Kiosks," on or about Nov. 1999, 2 pages.	
		SELLERS, D., "Touchscreen system for new iBooks announced," MacWorld Website, May 17, 2001, 7 pages.	
		TROLL TOUCH WEBSITE, "TouchStar2 touch screen system for Apple LCD iMac," Press Release for March 26, 2002, 2 pages.	
		MAC-UPGRADE.COM, "Troll Touch offers Touch Screen for iMac G4," March 28, 2002, 3 pages.	
		TROLL TOUCH, "TouchSTAR Enchancement for Apple Cinema Displays," July 1, 2003, 4 pages.	
		KIOSKCOM.COM, "TouchSTAR Enhancement for Apple 20" & 23" HD Cinema Displays Shipping," July 2, 2003, 1 page.	
		Troll Touch, Advertisement for "iBook Laptop Touchscreen," 1 page.	
KL		Troll Touch, Advertisment for "TouchStar iMac," 1 page.	

Examiner Signature		Date Considered	3/30/06

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1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

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SECOND

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

	Complete if Known
Application Numb r	10/679,930
Filing Date	10-05-03
First Named Inventor	Durso
Art Unit	
Examiner Name	
Attorney Docket Number	07-03-0016

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
KL		Troll Touch, 6 photos at Worldwide Web Developers Conf., San Francisco, CA, showing non-working prototype of "Slipcover Touch Input Apparatus," about June 22, 2003, 6 pages.	
		Troll Touch, Advertisement for "Portable Touchscreen System," on or about July 12, 1996, 1 page.	
		Troll Touch Website, http://www.trolltouch.com/pages/products/addonscreens.html, on or about July 12, 1996, 2 pages.	
		Troll Touch Website, http://www.trolltouch.com/news.html, printed July 9, 2003 referring to various dates, 5 pages.	
		Troll Touch Website, http://www.trolltouch.com/pages/products/plasma.html, on or about July 7, 1998, 2 pages.	
		Troll Touch, Advertisement for "TouchStar 50 System," on or about July 7, 1998, 1 page.	
		Troll Touch, Advertisement for "Laptop Touchscreen Enclosure - the Wedge" on or about June 1996, 1 page.	
KL		Troll Touch, Advertisement for "Multimedia Kiosk," on or about April 1995, 1 page.	

Examiner Signature		Date Considered	3/30/06

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 4

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	DURSO, N.
Art Unit	
Examiner Name	
Attorney Docket Number	07-03-0016

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
RL		US- 6259597-B1	07-10-2001	ANZAI	
		US- 6163313	12-19-2000	AROYAN	
		US- 6149001	11-21-2000	AKINS	
		US- 5931297	08-03-1999	WEILL	
		US- 4692809	09-08-1987	BEINING	Col. 2, 8
		US- 4346376	08-24-1982	MALLOS	
		US- 4220815	09-02-1980	GIBSON	
		US- 3673327	06-27-1972	JOHNSON	
		US- 2002-0126102 A1	09-12-2002	REDMAYNE	
		US- 2002-0181190 A1	12-05-2002	CALLADO	
		US- 6587097-B1	07-01-2003	AUFDERHEIDE	
		US- 6005767	12-21-1999	KU	
		US- 5870282	02-09-1999	ANDREET	
		US- 6125033	09-26-2000	ANDRE	
		US- 5761485	06-02-1998	MUNYAN	
		US- 5702166	12-30-1997	LEE	
		US- 5697793	12-16-1997	HUFFMAN	
		US- 5594471	01-14-1997	DEERAN	
RL		US- 5283862	02-01-1994	LUND	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
RL		EP-1018680-A2	07-12-2000	MURPHY		
RL		WO 00-50979-A1	08-31-2000	MOSCOVITCH		

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This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Sheet 2 of 4

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		US- 4821030	04-11-1989	BATSON	
		US- 6480377-B2	11-12-2002	GENEST	
		US- 6402269-B1	06-11-2002	ROTH	
		US- 6414671-B1	07-02-2002	GILLESPIE	
		US- 6392636-B1	05-21-2002	FERRARI	
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		US- 5953199	09-14-1999	OWENS	
		US- 5469194	11-21-1995	CLARK	
		US- 20020118177-A1	08-29-2002	NEWTON	
		US- 4545023	10-01-1985	MIZZI	
		US- 5025411	06-18-1991	TALLMAN	
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		US- 6151005	11-21-2000	TAKITA	
		US- 6262717-B1	07-17-2001	DONOHUE	
		US- 6267236-B1	07-31-2001	SEOK	

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Sheet 3 of 4

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		US- 6357887-B1	03-19-2002	NOVAK	
		US- 6504530-B1	01-07-2003	WILSON	
		US- 5341154	08-23-1994	BIRD	
		US- 5379057	01-03-1995	CLOUGH	
		US- 5543588	08-06-1996	BISSET	
		US- 5675362	10-07-1997	CLOUGH	
		US- 5768386	06-16-1998	YOKOMOTO	
		US- 5880411	03-09-1999	GILLESPIE	
		US- 6383931-B1	04-30-2002	GILLESPIE	
		US- 6414674-B1	07-02-2002	KAMPER	
		US- 6424338-B1	07-23-2002	ANDRESON	
		US- 6437774-B1	08-20-2002	TSUJI	
		US- 6492979-B1	12-10-2002	KENT	
		US- 5555490	09-10-1996	CARROLL	
		US- 5572401	11-05-1996	CARROLL	
		US- 6369795	04-09-2002	LESTER	
		US-			
		US-			
		US-			

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Sheet 4 of 4

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NON PATENT LITERATURE DOCUMENTS

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AL		Printout from www.TOUCHSCREENS.COM; "How Does a Touchscreen Work and Comparing Touchscreen Technologies." 10-05-2003, p. 1-15.	

Examiner Signature		Date Considered	3/30/06

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	Examiner Regina Liang	Art Unit 2629	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,118,436 A	09-2000	Kushita, Masayuki	345/173
*	B	US-5,233,502 A	08-1993	Beatty et al.	361/681
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
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	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	EP 0 181 196	05-1986	EP	Kurtzig	-----
	O	JP406110609	04-1994	JP	Saito et al	-----
	P	JP2002023952	01-2002	JP	Nippondenso co Lto	-----
	Q	JP2000311059	11-2000	JP	Wakabayashi	-----
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

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(54) **Removable touchscreen.**

(57) The present invention provides multi-purpose touchscreens and touchpads which may be utilized in the customary manner associated with such devices, but which are configured also for use in other non-traditional modes. According to one aspect of the invention, a touchscreen is configured for use attached to a display monitor, and also for use on a stand-alone basis (when removed from the monitor) as a touchpad. According to another aspect of the invention, a touchscreen or touchpad is configured to facilitate use of the device in conjunction with information presented on the pages of a printed book. Configurations are disclosed which provide alignment of the device with book pages and which provide special protections for various elements of the device to insure long life and reliable performance.

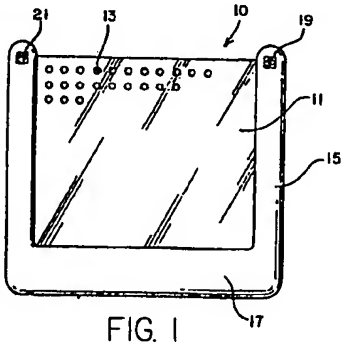

FIG. 1

EP 0 181 196 A2

Croydon Printing Company Ltd

REMOVABLE TOUCHSCREEN

Background of the Invention

This invention relates generally to touch-sensitive devices for providing input to digital computer systems, and more particularly to touchscreens and touchpads which are adapted for multi-purpose use, especially for use in conjunction with a printed book.

Touchscreen devices of many kinds are known in the prior art. These are commonly used to provide touch-sensitive input to digital computer systems. The touchscreen is placed over the display monitor so that locations on the touchscreen can be touched which are associated with information presented on the underlying display monitor. Typical prior art references describe touchscreens which either contain no mechanism for attachment to the display monitor, or which include a mechanism which more or less permanently affixes the touchscreen to the face of the display monitor. Typical devices of the former kind are illustrated in U.S. Patent 3,911,215 and U.S. Patent 4,220,815. In the present specification and claims, the term "touchscreen" will be used to mean those touch-sensitive devices of the type which are attachable to a display monitor.

Also known in the prior art are touchpad devices which also provide touch-sensitive input to digital computer systems. These devices, however, are not

associated with a display monitor, but are responsive to touch at random positions or at positions associated with the information on a "template" which is placed over the touchpad. Such a device is exemplified by the Koala Pad manufactured by Koala Technologies Corporation, in Santa Clara, California. Such touchpads are not usually associated with display monitors, as described above in connection with touchscreens; for example, most touchpads are not constructed from transparent materials, nor are they constructed to be attachable to a display monitor.

Finally, in U.S. Patent 4,071,689 there is described a transparent touch-sensitive device which may be placed adjacent to a display monitor, or alternatively adjacent to "hard copy" (col. 5, line 30) for use as a touch sensitive device in connection with either. However, there is no description in this reference of attaching the device to a display monitor in a detachable manner, or in any manner at all.

In none of the above mentioned references is there any description of a touchscreen or touchpad used in conjunction with the printed matter contained in a book, as opposed to a display monitor, or merely "hard copy." Such a device would offer numerous advantages over prior art devices, as will be described more fully below.

Summary of the Invention

In accordance with the illustrated preferred embodiments, the present invention provides multi-purpose touchscreens and touchpads which may be utilized in the customary manner associated with such devices, but which are configured also for use in other non-traditional modes.

According to one aspect of the invention, a touchscreen is configured for use attached to a display

monitor, and also for use on a stand-alone basis as a touchpad.

According to another aspect of the invention, a touchscreen or touchpad is configured to facilitate use of the device in conjunction with information presented on the pages of a printed book.

In accordance with another aspect of the invention, the active area of the touchscreen or touchpad is surrounded with a three-sided U-shaped frame which facilitiates insertion and alignment of the device into a printed book, enabling the user to interact with the printed and graphic information in the book by touching the touchscreen or touchpad appropriately.

In accordance with yet further aspects of the invention, conductive elements are deposited onto the touchpad or touchscreen in such manner as to insure long-life of the active area and the conductive elements.

Description of the Drawing

Figure 1 is a touch-sensitive device with attachment pads for quick attachment and detachment to a display monitor.

Figure 2 shows a touch-sensitive device interacting with a book.

Figure 3 shows a side view of a touch-sensitive device including alignment posts for use with a book.

Figures 4a through 4d show the construction of the bottom section of a touch-sensitive device.

Figure 5 shows the construction of the top section of a touch-sensitive device.

Description of the Preferred Embodiment

In Figure 1 there is shown a device 10 which can function as a touchscreen or a touchpad, as those terms are commonly known in the art. In the present specification and claims, the term "touchscreen" will

be taken to mean a touch-sensitive device which is attachable to and used in conjunction with a display monitor. The term "touchpad" will mean a touch-sensitive device which is not attachable to a display monitor, but which is used on a stand-alone basis. More particularly, device 10 includes an active area 11 which may be a pair of transparent conducting plates, each of which includes a transparent substrate with a material such as Indium Tin Oxide (ITO) deposited thereon. The plates are separated from each other by rows of transparent insulating spacers 13 fabricated from plastic or epoxy so that contact between the plates only occurs at points subjected to pressure caused by the touch of a user. The contact point is detected by external circuitry well known to those skilled in the art; for example, a device of this general type is described in U.S. Patent Number 3,911,215 issued to Hurst and Colwell. Note that if the device is to be used only as a touchpad and not as a touchscreen, then the materials of active area 11 need not be transparent. Other types of touchscreens and touchpads are also know in the art, and could be employed in the present invention. Some examples are: an LED (light emitting diode) based device, such as the touchscreen on the Model 150 personal computer manufactured by the Hewlett-Packard Company; and a capacitive based device, such as the Model TK 1000 manufactured by Interaction Systems, Inc., of Newtonville, Massachusetts.

In this preferred embodiment, active area 11 is surrounded on three sides by a frame 15, which may be of molded plastic or other suitable material. In a preferred embodiment, a bottom portion 17 of frame 15 is hollow, so that external circuit elements may be contained therein.

In operation as a touchscreen, device 10 is placed over a display monitor, such as a television screen or a CRT monitor of the type associated with a digital computer system. The touchscreen is attached to the display monitor in a manner which facilitates easy attachment and easy removal. For example, in Figure 1 a pair of Velcro pads 19 and 21 are affixed to frame 15. These pads are preferably of the "loop" type so that they will not attach to the user's clothing when the touchscreen is being handled. A corresponding pair of Velcro pads, preferably of the "hook" type is affixed to the display monitor, so that when frame 15 is positioned over the display monitor, the Velcro pads on the monitor engage pads 19 and 21, thereby holding the touchscreen in place. When it is desired to use the device in a different mode apart from the display monitor (for example, as a stand-alone touchpad), pads 19 and 21 are simply and quickly disengaged from the corresponding pads on the display monitor. The device may now be used on a stand-alone basis as a touchpad, or in conjunction with other items such as templates or books.

Velcro pads 19 and 21 are the preferred form of attachment of the touchscreen because they can be quickly engaged and disengaged and they permit attachment to a wide variety of shapes and sizes. However, other forms of attachment may also be employed. For example, brackets may be affixed to the display monitor, and the touchscreen hung from the brackets, or alternatively, the touchscreen may be simply clamped to a post on the display monitor to provide the desired quick release. All of these quick-engagement and disengagement devices are distinct from prior art attachable touchscreens, which typically required that a front panel, or bezel of the display

monitor be removed and replaced to attach the touchscreen.

After the touchscreen is affixed to the monitor, alignment is achieved by the user touching a pair of points indicated by "markers" shown on the monitor. This position information is sent to the digital computer system which can then associate future touches, with the proper information displayed in the monitor.

A device such as that illustrated in Figure 1 provides yet an additional advantage over prior art touchscreens and touchpads. This feature is illustrated in Figure 2, which shows a printed book 23 such as a textbook. Touchscreen (or touchpad) 10 is positioned above and adjacent to an open page of book 23 so that printed information on the page can be viewed through the active area of the touchscreen.

Figure 2 shows that the U-shaped structure of frame 15 facilitates the use of the touchscreen with book 23. More particularly, to insure that active area 11 will lie flat on the open book, as well as to provide maximum overlap of the touchscreen with the open page, an edge 25 of active area 11 is not protected by frame 15, but is left exposed. It should be noted, however, that for aesthetic reasons, it may be desirable in some instances to extend frame 15 partially or even completely onto the fourth side, although it should generally be much thinner there to avoid interferring with use of the touchscreen when placed adjacent the page of a book.

Also illustrated in Figure 2 is a scheme for identifying page numbers. More particularly, a symbol 41 is shown in the upper left hand corner of the open page of book 23. In this case, the symbol is shown as a "happy face" which would be appropriate for subject matter directed toward children. However, it is not

the contents of the symbol which is important, but rather only the location of the symbol on the page. Thus when a user touches symbol 41 through the touchpad, the location of that symbol is inputted to the digital computer, which interprets that location as a certain page number, say page 1. On other pages, the happy face symbol will appear at different locations such as those illustrated by symbols 43 and 45 which may represent e.g., pages 2 and 60 respectively. Thus, the user need only touch the symbol on any page prior to using that page to inform the digital computer of the relevant page number. This example illustrates that the user need have no knowledge of the page number himself, but need only remember to touch the symbol, which can even be responsive to a prompt from the system.

Alignment of active area 11 with the book page is important. To this end, the preferred embodiment of the invention utilizes small posts 27 and 29 extending perpendicularly to active area 11 near edge 25. These are inserted into corresponding holes 37 and 39 at the inner edge of the pages of book 23. As shown in more detail in Figure 3, posts 27 and 29 extend downwardly from active area 11 a sufficient height to insure that the device will not move when the posts are inserted into holes 37 and 39; a height of about 0.1" is appropriate. Additional posts 31 and 33 are shown extending from the opposite side of active area 11 which enable the device to be used in a mode of operation in which the book page is positioned on top of the touch-sensitive device, so that the user applies pressure to the device through the book page (or pages). Note that if only this mode of operation is desired, it is not necessary that active area 11 be transparent.

Another way in which the touch-sensitive device can be aligned with the book is by having the user touch two points on active area 11 associated with two corresponding alignment markers on the open book page. This alignment method may be used in lieu of the post configuration described above, or alternatively can be used in conjunction with the post configuration to insure good alignment. If page numbers are identified by symbols such as the happy faces described, then these symbols can also serve as some or all of the alignment markers.

By associating the touchscreen or touchpad with a book in the above-described manner, a user can touch the touchscreen at positions associated with the information printed on the open page of book 23. This makes it possible for the user to quickly and directly input information into a computer system based on the user's response to the printed or graphic material in the book. The uses of such a system are manifold; for example, the book may contain tutorial course materials associated with other materials presented on the display of a computer system using software associated with the book. The touchscreen of the present invention thereby makes possible the smooth integration of the book materials and the software materials via the user interaction with the touchscreen. This integrates the best features of the book, i.e., high quality text and graphics with the capability of a computer to interact with the user.

Illustrative of the many uses of this system which are not otherwise possible in the prior art is the ability of the user to identify and point to details in photographs, x-rays and other visual presentations which are easily printed in a book, but not easily reproducible on a computer display terminal. In Figures 4a through 4d and Figure 5 are shown a pair of

components (bottom and top components respectively) which include transparent conducting materials making up active area 11 and other supporting features of a preferred embodiment of the present device. Figures 4a through 4c show the bottom component in more detail. In Figure 4a, there is shown transparent substrate element 47, e.g., of polyester. Figure 4b shows a film of transparent conducting material 11a, such as the ITO deposited on substrate 47 as described above having top and bottom edges 57 and 59.

A conducting element 49 of a material, such as silver, overlaps and electrically connects to the top edge of conducting film 11a. A second conducting element 51 overlaps and electrically connects to the bottom edge of conducting film 11a. Conducting elements 49 and 51 serve as the "y-axis" connections to conducting film 11a.

In Figure 4d there is shown a spacer element 53 of a non-conducting material such as a non-conducting epoxy, which serves to space conducting film 11a and conductors 49 and 51 away from corresponding elements on a top component (Figure 5). In the prior art, it was common for an edge of the spacer to overlap conducting film 11a as shown by dotted line 55. However, in use, when subjected to user pressure, conducting film 11a tended to form minute cracks under edge 55 causing unreliable performance.

In the preferred embodiments of the present invention, this problem is eliminated by proper positioning of the spacer edge. For example, the bottom edge 57 is located in a region above conductor 51, rather than on the transparent conducting film (as was edge 55 in the prior art). Any minute cracks which might appear under edge 57 are therefore electrically nullified by conduction of current through conductor 51 in the cracked regions.

An alternate positioning of spacer 53 which also alleviates the cracking problem is illustrated (again in Figure 4d), by the upper edge 59, which is located back from conductor 49. Thus, if cracking should occur at edge 59, it will not affect operation of the device, since the active area of film 11a is only the area between conductors 49 and 51.

Finally, Figure 4d also shows a few exemplary "spacer dots" 60. A grid of spacer dots of like material and thickness is overlayed onto conducting film 11a and substrate 47 along with the overlaying of spacer 53.

Figure 5 shows the construction of the top component of the device including a conducting film 11b on a substrate 61. In a manner similar to that described above with regard to the bottom component, a pair of conducting elements 63 and 65 serve as the x-axis connections to conducting film 11b. When the top component of Figure 5 is inverted and attached to the bottom component of Figure 4d, spacer 53 and spacer dots 60 electrically isolate conducting film 11a and 11b, except where these films are brought together by the pressure of user touch.

Although in general, either the x or y conducting elements could be affixed to either the top or bottom components of the device. In the preferred embodiment, it is desirable to position the elements as shown in Figures 4a through 4d and Figure 5, so that x-conducting elements 63 and 65 on the top component are not placed along edge 25 of Figure 2. This prevents damage to the conducting elements since that edge is not protected by frame 15 of Figure 2.

Although Velcro has been referred to, other textile-like materials which can be attached to each other by interengagement of their surface features, and detached again, could be employed.

CLAIMS

1. A touchscreen for a display monitor comprising:

an active area; and

attachment means for removably attaching the touchscreen to the display monitor, so that the touchscreen may also be used as a touchpad without regard to the display monitor.

2. A touchscreen as in claim 1 wherein the attachment means comprises a first Velcro pad attached to the display monitor and a second Velcro pad attached to a portion of the touchscreen.

3. A touchscreen as in claim 1 wherein said touchscreen is also configured to facilitate insertion thereof adjacent a page of an open book, so that a user can interact with printed information on the page by touching the active area at locations associated with the printed information on the page.

4. A touchscreen as in claim 3 wherein the active area is rectangular and is bounded on three sides by a frame, but is unbounded on the fourth side to facilitate insertion thereof over or under a page of an open book.

5. A touchscreen as in claim 3 further comprising alignment means for aligning the touchscreen with the page of the book.

6. A touchscreen as in claim 5 wherein the alignment means comprises a pair of posts extending from the touchscreen, for insertion into a pair of corresponding holes in the pages of the book.

7. A touchscreen as in claim 1, further comprising:

a pair of conducting elements in electrical contact with the active area; and

a spacer element on a portion of the active area, the edges of said spacer element being positioned not in the region between said conducting elements.

8. An information transfer system comprising:

a touchscreen for use with a display monitor comprising:

an active area;

attachment means for removably attaching the touchscreen to the display monitor, so that the touchscreen may also be used as a touchpad without regard to the display monitor;

said touchscreen also configured to facilitate insertion thereof adjacent a page of an open book, so that a user can interact with printed information on the page by touching the active area at locations associated with the printed information on the page; and

alignment means for aligning the touchscreen with the page of the book;

and

a book containing pages having information thereon, the book including mating alignment means for interacting with the alignment means of the touchscreen to align the touchscreen with a page of the book when the touchscreen is placed adjacent that page.

9. An information transfer system as in claim 8 further comprising identifying means for identifying the page number of the page adjacent the touchscreen.

10. An information transfer system as in claim 9 wherein the identifying means includes a symbol on the page whose location is indicative of the page number of that page, so that the user can touch the touchscreen at a position associated with the position of the symbol.

11. A touchpad comprising:

an active area; and

insertion means for facilitating insertion of the touchpad adjacent a page of an open book, so that a user can interact with printed information on the page by touching the active area at locations associated with the printed information.

12. A touchpad as in claim 11 wherein the active area is rectangular and is bounded on three sides by a frame, but is unbounded on the fourth side to facilitate insertion thereof into the binding of an open book.

13. A touchpad as in claim 11 further comprising alignment means for aligning the touchpad with the page of the book.

14. A touchpad as in claim 13 wherein the alignment means comprises a pair of posts extending from the touchpad, for insertion into a pair of correspondng holes in the pages of the book.

15. An information transfer system comprising:

a touchpad comprising:

an active area;

insertion means for facilitating insertion of the touchpad adjacent a page of an open book, so that a user can interact with printed information on the page by touching the active area at locations associated with the printed information; and

alignment means for aligning the touchpad with the page of the book;

and

a book containing pages having information thereon, the book including mating alignment means for interacting with the alignment means of the touchpad to align the touchpad with a page of the book when the touchpad is placed adjacent that page.

16. An information transfer system as in claim 15 further comprising identifying means for identifying the page number of the page adjacent the touchpad.

17. An information transfer system as in claim 16 wherein the identifying means includes a symbol on the page whose location is indicative of the page number of that page, so that the user can touch the touchpad at a position associated with the position of the symbol.

18. A method of using a touch-sensitive device to input data to a digital computer system in conjunction with information contained on the pages of a book, comprising the steps of:

placing the device adjacent a page of the book; and

touching the device in a location associated with information on the book page to generate input data for the digital computer system.

19. A method as in claim 18 further comprising the step of touching the device in a position associated with information on the book page identifying the page number of the book page, so that data reflecting the page number will be input to the digital computer system.

20. A method as in claim 19 wherein the information identifying the page number comprises the location on the book page of a symbol.

21. A method as in claim 20 wherein the symbol is a non-numeric symbol.

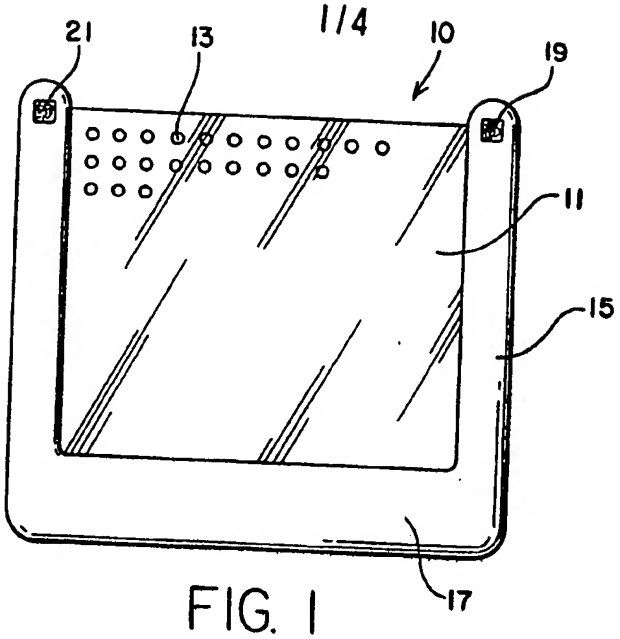

FIG. 1

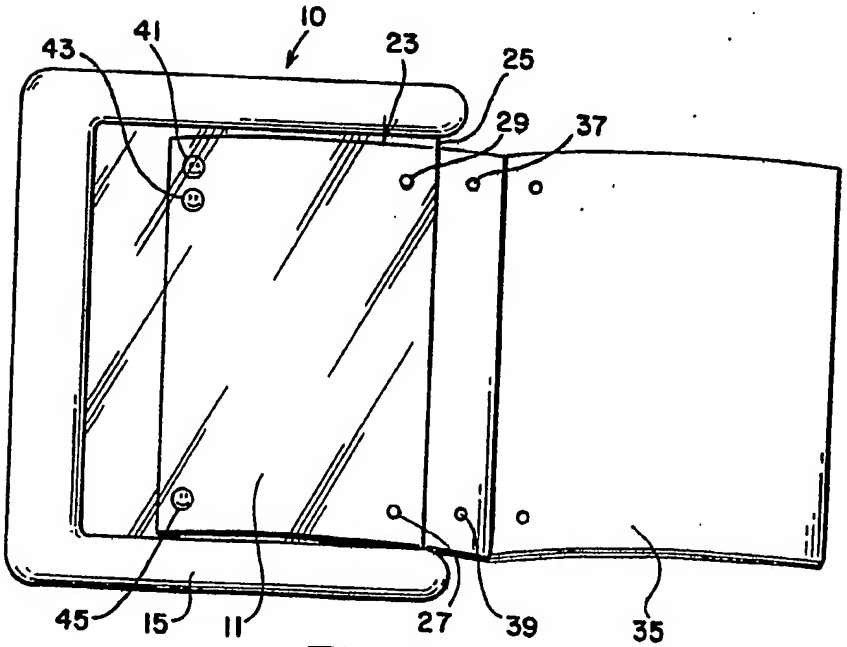

FIG. 2

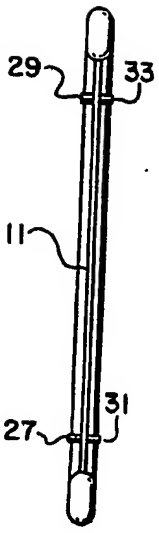

FIG. 3

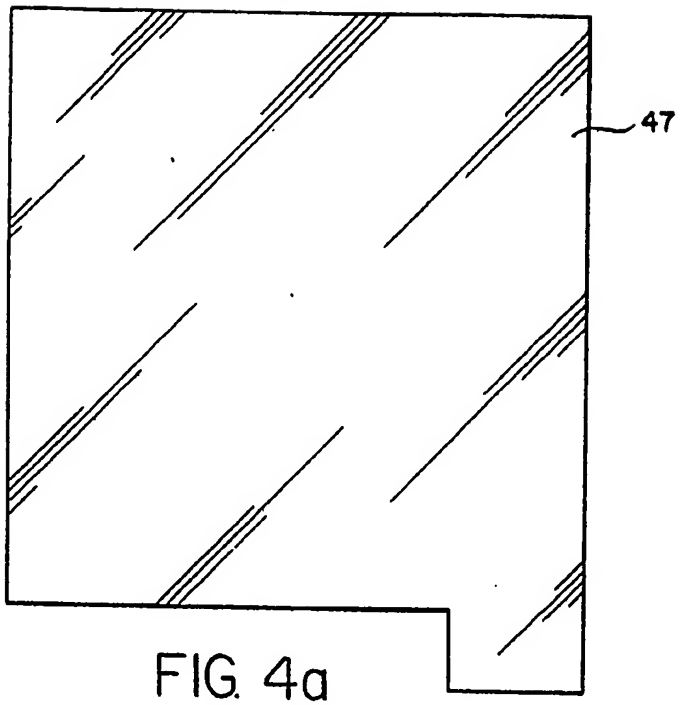

FIG. 4a

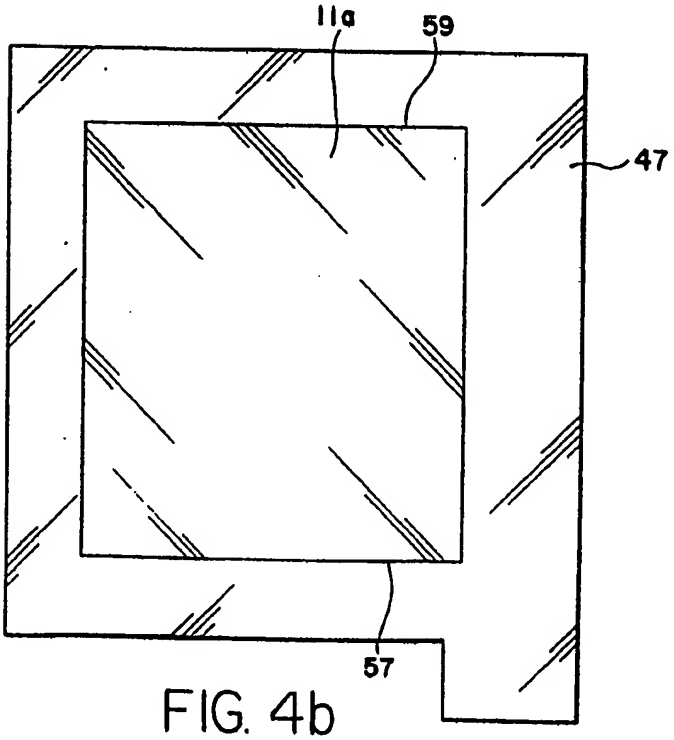

FIG. 4b

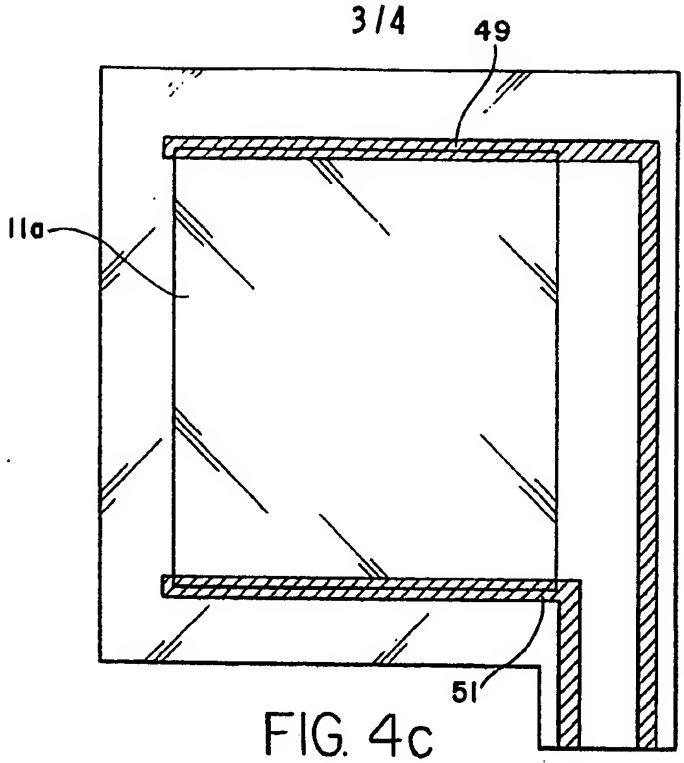

FIG. 4c

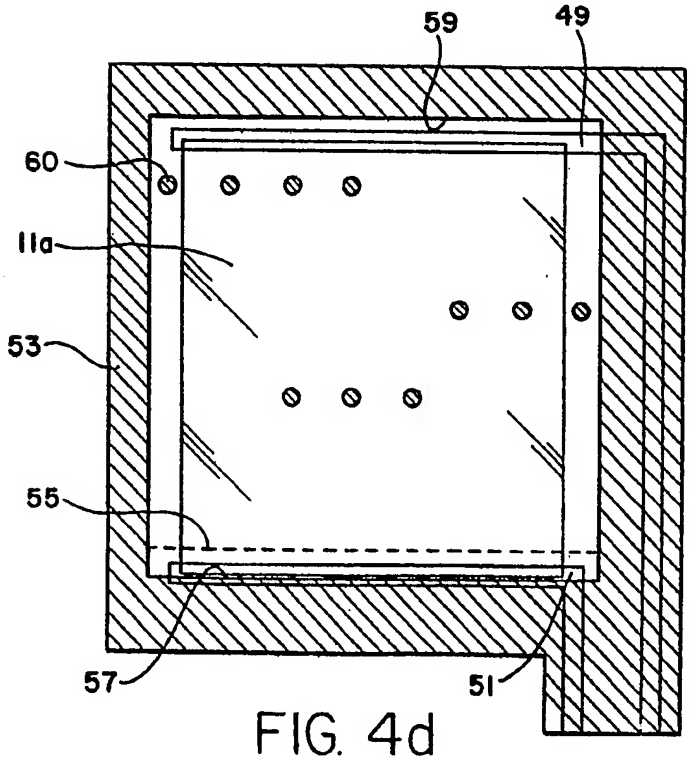

FIG. 4d

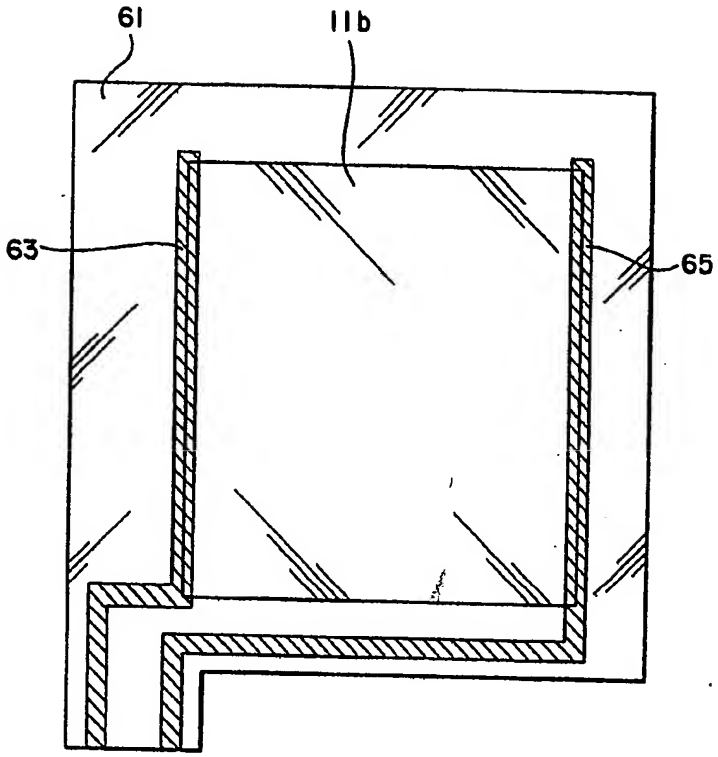

FIG. 5

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TITLE: TOUCH PANEL TYPE CONTROLLER

PUBN-DATE: April 22, 1994

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APPL-NO: JP04282502

APPL-DATE: September 28, 1992

INT-CL (IPC): G06F003/033, B60R011/02 , B60R016/02 , G06F003/03 , G11B033/02

ABSTRACT:

PURPOSE: To improve operability by providing a sheet mounting part on an attachable/**detachable touch panel** so as to mount a sheet member displaying operated contents.

CONSTITUTION: A **touch panel part 20 is freely attachably and detachably** fitted to a main body 11 of a monitor, one end of a cord 22 is freely attachably and **detachably fitted to a control unit part 21 of the touch panel** part 20, and the other end of the cord 22 is freely attachably and detachably fitted to the side of the main body 11 of the monitor. The touch panel part 20 is provided with a mounting part 24 for mounting a sheet board 23. In this case, functions or the like for instructing the operations of an on-vehicle equipment are printed and displayed on the sheet board 23. The mounting part 24 is provided with a touch sensor switch so as to grasp an instructed position by pressing it with a finger from the surface of the sheet board 23. Therefore, the selection of the on-vehicle equipment and the operation mode designation of the selected equipment can be performed by mounting the sheet

board 23 to the **touch panel part 20 in the state of detaching the touch panel** part 20 from the main body 11 of the monitor.

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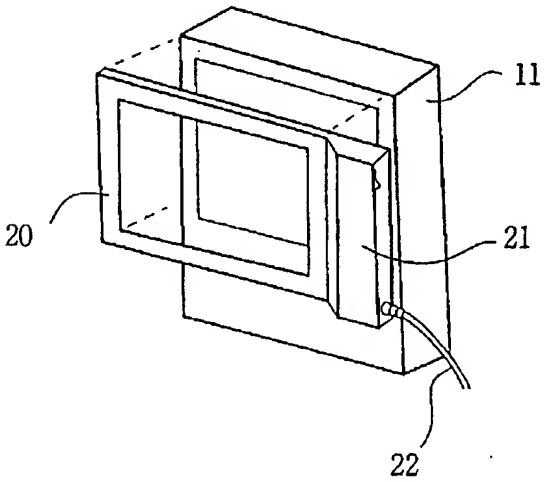
(54)【発明の名称】　タッチパネル式コントローラ

(57)【要約】

【目的】　操作性の向上を図ること。

【構成】　タッチパネル部２０をモニタ本体１１に対して着脱自在に取付けるとともに、タッチパネル部２０をモニタ本体１１から取り外した状態では、操作内容を表示したシート板２３をタッチパネル部２０に装着し、シート板２３の所定箇所をタッチすることにより車載用機器の選択及び選択機器の動作モードの指定等が可能となる。

【効果】　操作範囲が従来のように、運転席又は助手席といったように限られてしまうことがなくなり、後部座席でもタッチ操作を行うことができ、また運転中の操作に際しては、運転視界から目を外すことなくタッチパネル部２０によるタッチ操作が可能となるため、運転に集中を欠いてしまうということもなくなるので、操作性の向上が図れる。



1

【特許請求の範囲】
【請求項１】　情報を表示するモニタ本体と、
このモニタ手段の前面部に着脱自在に取付けられ、タッチ入力が行われた場合に操作モードに対応するデータを出力するタッチ式パネルと、
このタッチ式パネルに設けられ、操作内容を表示したシート部材を装着するためのシート装着部とを具備することを特徴とするタッチパネル式コントローラ。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は、モニタ本体の前面部にタッチ式パネルを着脱自在に取付けるとともに、モニタ本体の前面部からタッチ式パネルを取り外した状態でのタッチ入力が可能なタッチパネル式コントローラに関する。
【０００２】
【従来の技術】近年、モニタ本体の画面に対するタッチ入力によって車載用機器の動作を集中的にコントロールすることが可能なタッチ入力コントロール装置が普及している。
【０００３】このようなタッチ入力コントロール装置として、たとえば特開平４－８７８３９号公報には、車両異常情報の割込み表示によるタッチ入力操作の阻害及び車両異常情報の表示位置の移動による表示内容の認識の阻害を防止するようにした車載用表示制御装置が開示されている。
【０００４】すなわち、図１に示すように、タッチパネル入力部１は、操作者が指等をディスプレイ２の表示面に接触させるか、あるいは一定距離以内まで近づけたとき、デイプレイ２の表示面上の操作者の指のタッチ位置データをインタフェース４を介してマイクロコンピュータ７に送出するものである。
【０００５】マイクロコンピュータ７は、タッチパネル入力部１からのタッチ位置データを受取ると、どの領域がタッチされたかを判定し、そのタッチ操作によって割り当てられた機能に応じてチューナやカセットデッキ等の車載用機器６の動作モードの制御を行う。また、マイクロコンピュータ７は、車両センサ５から得られた情報に基づき、車両に異常が発生したと判定した場合、ディスプレイコントローラ３を介してディスプレイ２に対し、現在表示されている画面の一部に車両異常情報の割込みをかける。
【０００６】
【発明が解決しようとする課題】このように、上述した従来の車載用表示制御装置では、タッチパネル入力部１へのタッチ入力により、車載用機器６の動作を集中的にコントロールすることができるとともに、車両に異常が発生した場合にはディスプレイ２にその旨が表示されるようになっている。
【０００７】ところが、このような車載用表示制御装置

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では、タッチパネル入力部１がディスプレイ２に固定されているため、操作範囲が運転席又は助手席といったように限られてしまう。すなわち、後部座席ではタッチ操作を行うことができないという不具合がある。
【０００８】また、運転中の操作に際しては、タッチパネル入力部１の表示内容を確認する必要があることから、運転に集中を欠いてしまう場合があり、操作性の上で不具合があった。
【０００９】本発明は、このような事情に対処してなされたもので、操作性の向上を図ることができるタッチパネル式コントローラを提供することを目的とする。
【００１０】
【課題を解決するための手段】本発明のタッチパネル式コントローラは、情報を表示するモニタ本体と、このモニタ手段の前面部に着脱自在に取付けられ、タッチ入力が行われた場合に操作モードに対応するデータを出力するタッチ式パネルと、このタッチ式パネルに設けられ、操作内容を表示したシート部材を装着するためのシート装着部とを具備することを特徴とする。
【００１１】
【作用】本発明のタッチパネル式コントローラでは、モニタ手段の前面部にタッチ式パネルが着脱自在に取付けられており、タッチ式パネルをモニタ本体から取り外した状態では、操作内容を表示したシート部材をタッチ式パネルに装着することによって車載用機器の選択及び選択機器の動作モードの指定等を行うことができる。
【００１２】したがって、操作範囲が従来のように、運転席又は助手席といったように限られてしまうことがなくなり、後部座席でもタッチ操作を行うことができる。また、運転中の操作に際しては、運転視界から目を外すことなくタッチ式パネルによるタッチ操作が可能となるため、運転に集中を欠いてしまうということもなくなる。
【００１３】
【実施例】以下、本発明の実施例の詳細を図面に基づいて説明する。図２乃至図４は、本発明のタッチパネル式コントローラの一実施例を示すもので、モニタ本体１１に対してタッチパネル部２０が着脱自在に取付けられている。モニタ本体１１に対するタッチパネル部２０の着脱方式に際しては、たとえばマジックテープ（登録商標）による接着方式やフック部材等による係合方式等を採用することができる。
【００１４】タッチパネル部２０のコントロールユニット部２１には、コード２２の一端が着脱自在に取付けられている。コード２２の他端は、モニタ本体１１側に着脱自在に取付けられている。
【００１５】タッチパネル部２０には、シート板２３を装着するための装着部２４が設けられている。ここで、シート板２３には、車載用機器の動作を指示するための機能等が印刷表示されている。装着部２４には、図示省

略のタッチ感知スイッチが設けられており、シート板２３の表面から指を押し当てることによって後述するように指示位置が把握されるようになっている。

【００１６】また、シート板２３は、たとえば車載用機器であるチューナ、ＣＤプレーヤ、カセットデッキ等に対応させて複数毎用意されている。なお、タッチパネル部２０の装着部２４へのシート板２３の装着の判別は、装着部２４側に光学的又はメカニカル的なセンサを採用することによって可能となる。

【００１７】コントロールユニット部２１がシート板２３の種別を表す情報をシステムコントローラ２６に送出することにより、システムコントローラ２６が判別する。

【００１８】シート板２３の判別に際しては、たとえば図５に示すように、コントロールユニット部２１にシルク板２３に対応させて設けられた選択ボタン２７，２８，２９を操作することによって行うようにしてもよい。

【００１９】図６は、モニタ本体１１の画面の表示内容に対応させたシート板２３の種別を示すもので、同図（ｂ）は同図（ａ）に示すＧＰＳ画面❶に対応したＧＰＳ用シートである。同図（ｄ）は同図（ｃ）に示すＧＰＳ画面❷に対応したＧＰＳ用シートである。

【００２０】図７は、モニタ本体１１の画面の表示内容に対応させたシート板２３の種別を示すもので、同図（ｂ）は同図（ａ）のオーディオ画面❶に対応したオーディオ用シートを示すものである。同図（ｄ）は同図（ｃ）のオーディオ画面❷に対応したオーディオ用シートを示すものである。ちなみに、同図（ｅ）は、シートの変更を促すモニタ本体１１の画面の表示内容の一例を示すものである。

【００２１】続いて、このような構成のタッチパネル式コントローラの動作について説明する。

【００２２】まず、図８は、タッチパネル部２０の収容部２４にシート板２３が装着されたか否かの判別を行うようにしたフローを示すもので、初期設定を行った後、タッチパネル部２０がモニタ本体１１の前面に装着されたか否かの判断が行われる（ステップ８０１，８０２）。装着の判断に際しては、たとえばモニタ本体１１の前面にメカニカルスイッチを設けておき、そのスイッチがオンされたとき、タッチパネル部２０がモニタ本体１１の前面に装着されたと判断するようにしてもよい。また、このようなメカニカルスイッチに限らず、光学式センサによりタッチパネル部２０の装着の有無を判断するようにしてもよい。

【００２３】タッチパネル部２０がモニタ本体１１の前面に装着されていると判断された場合、通常のタッチパネル入力を行うとタッチされた箇所の座標がコントロールユニット部２１によってデータに変換された後、システムコントローラ２６に送出されると、システムコントローラ２６はモニタ本体１１に対して表示コントロール情報を出力する（ステップ８０３～８０５）。

【００２４】これにより、モニタ本体１１の画面がタッチ入力されたモードに変わる（ステップ８０６）。この状態で更にタッチ入力が行われると、上記同様に、タッチされた箇所の座標がコントロールユニット部２１によってデータに変換された後、システムコントローラ２６に送出される。システムコントローラ２６はモニタ本体１１に対して表示コントロール情報を出力する（ステップ８０７）。

【００２５】一方、（ステップ８０２）において、タッチパネル部２０がモニタ本体１１の前面に装着されていないと判断された場合、タッチパネル部２０のシート装着部２４にシート板２３が装着されているか否かの判断が行われる（ステップ８０８）。シート板２３が装着されていると判断された場合には、タッチパネル入力を行うとタッチされた箇所の座標がコントロールユニット部２１によってデータに変換された後、システムコントローラ２６に送出される（ステップ８０９，８１０）。次いで、（ステップ８０５）のフローに移行し、上記同様の動作が行われる。これに対し、（ステップ８０８）にてシート板２３が装着されていないと判断された場合には、モニタ本体１１の画面にシート板２３の装着がなされていない旨の警告内容が表示される（ステップ８１１）。

【００２６】図９は、図８のフローを変えた場合の他の実施例を示すもので、ＧＰＳ、テープ、ＣＤ又はラジオのファンクションが設定されると（ステップ９０１）、モニタ本体１１に対するタッチパネル部２０の装着の有無が判断される（ステップ９０２）。タッチパネル部２０が装着されていると判断された場合、上述した通常のタッチ操作が行われる（ステップ９０３）。

【００２７】これに対し、（ステップ９０２）にてタッチパネル部２０が装着されていないと判断された場合、スイッチがオンされたか否かの判断が行われる（ステップ９０４）。ここでのスイッチは、シート板２３を利用するか否かの決定を行うためのものであり、たとえばモニタ本体１１の画面上の位置をだいたいの検討を付けた状態でのタッチ操作を考慮したものである。なお、このようなスイッチは、モニタ本体１１側に設けてもよく、或はタッチパネル部２０側に設けてもよい。

【００２８】スイッチがオンされていないと判断された場合には、シート板２３の装着状態が判断される（ステップ９０５）。シート板２３が装着されていると判断された場合には、シート板２３の種別が判別され、適合性が判断される（ステップ９０６，９０７）。

【００２９】適合すると判断された場合には、（ステップ９０３）に移行しタッチ操作が行われる。これに対して適合しないと判断された場合には、たとえば「シートが違います。」といった内容がモニタ本体１１の画面に

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表示される（ステップ９０８）。一方、（ステップ９０５）にてシート板２３が装着されていないと判断された場合には、たとえば「シートが装着されていません。スイッチをオンして下さいといった内容がモニタ本体１１の画面に表示される（ステップ９０９）。

【００３０】このように、本実施例では、タッチパネル部２０をモニタ本体１１に対して着脱自在に取付けるとともに、タッチパネル部２０をモニタ本体１１から取り外した状態では、操作内容を表示したシート板２３をタッチパネル部２０に装着し、シート板２３の所定箇所をタッチすることにより車載用機器の選択及び選択機器の動作モードの指定等が可能となる。

【００３１】したがって、操作範囲が従来のように、運転席又は助手席といったように限られてしまうことがなくなり、後部座席でもタッチ操作を行うことができ、また運転中の操作に際しては、運転視界から目を外すことなくタッチパネル部２０によるタッチ操作が可能となるため、運転に集中を欠いてしまうということもなくなるので、操作性の向上が図れる。

【００３２】なお、本実施例においては、タッチパネル部２０のコントロールユニット部２１とモニタ本体１１とをコード２２を介して接続し、タッチパネル部２０からのタッチ位置データの送出を有線によって行う場合について説明したが、この例に限らずタッチパネル部２０からのタッチ位置データの送出を電波等による無線によって行うようにしてもよい。

【００３３】

【発明の効果】以上説明したように、本発明のタッチパネル式コントローラによれば、タッチ式パネルをモニタ本体から取り外した状態では、操作内容を表示したシート部材をタッチ式パネルに装着することによって車載用機器の選択及び選択機器の動作モードの指定等が可能となる。

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【００３４】したがって、操作範囲が従来のように、運転席又は助手席といったように限られてしまうことがなくなり、後部座席でもタッチ操作を行うことができ、また、運転中の操作に際しては、運転視界から目を外すことなくタッチ式パネルによるタッチ操作が可能となるため、運転に集中を欠いてしまうということもなくなるので、操作性の向上を図ることができる。

【図面の簡単な説明】

【図１】従来の車載用表示制御装置の一例を示すブロック図である。

【図２】本発明のタッチパネル式コントローラの一実施例を示す斜視図である。

【図３】図２のタッチパネル式コントローラを示すブロック図である。

【図４】図３のタッチパネル部を拡大して示す斜視図である。

【図５】図４のコントロールユニット部にシート板に対応させて設けられた選択ボタンを説明するための図である。

【図６】図２のモニタ本体の画面の表示内容に対応させたシート板の種別を示す図である。

【図７】図２のモニタ本体の画面の表示内容に対応させたシート板の種別を示す図である。

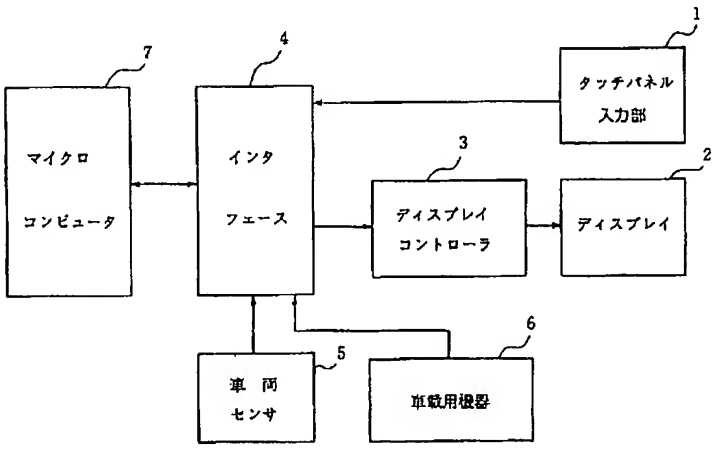
【図８】図２のタッチパネル式コントローラの動作を説明するためのフローチャートである。

【図９】図２のタッチパネル式コントローラの動作を説明するためのフローチャートである。

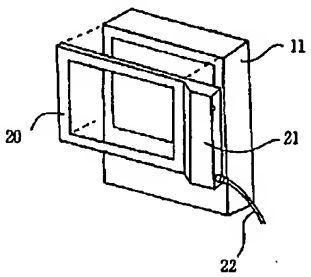
【符号の説明】

１１　モニタ本体
２０　タッチパネル部
２１　コントロールユニット部
２６　システムコントローラ

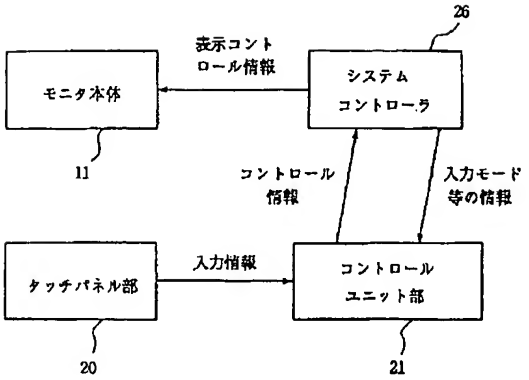
【図１】



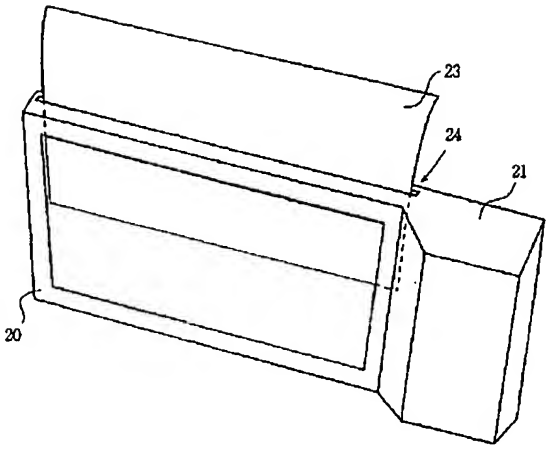
【図２】



【図3】


26
表示コント
ロール情報
モニタ本体
システム
コントローラ
11
コントロール
情報
入力モード
等の情報
タッチパネル部
入力情報
コントロール
ユニット部
20
21

【図4】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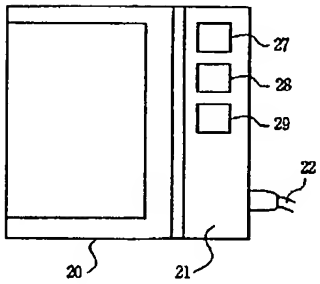
【図5】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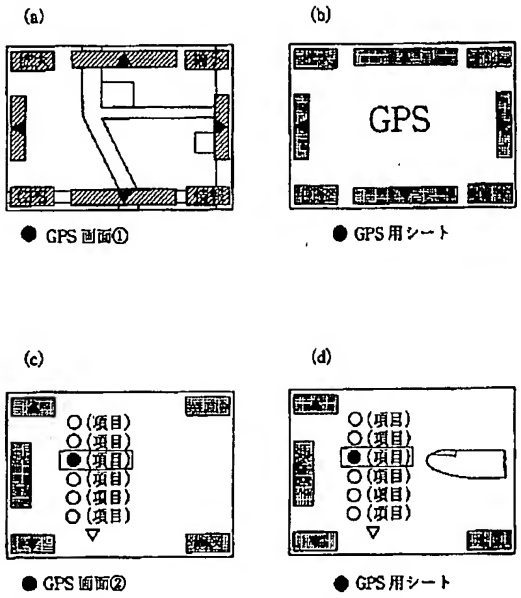
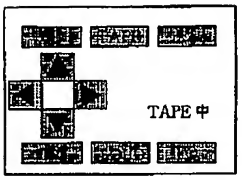
【図6】


(a)
(b)
GPS
● GPS 画面①
● GPS用シート
(c)
(d)
○(項目)
○(項目)
●(項目)
○(項目)
○(項目)
○(項目)
● GPS 画面②
● GPS用シート

【図7】

(a)

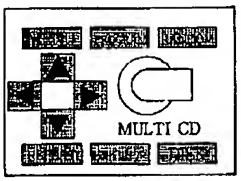


● オーディオ画面①

(b)

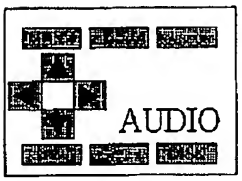
● オーディオ用シート

(c)



●オーディオ画面②

(d)

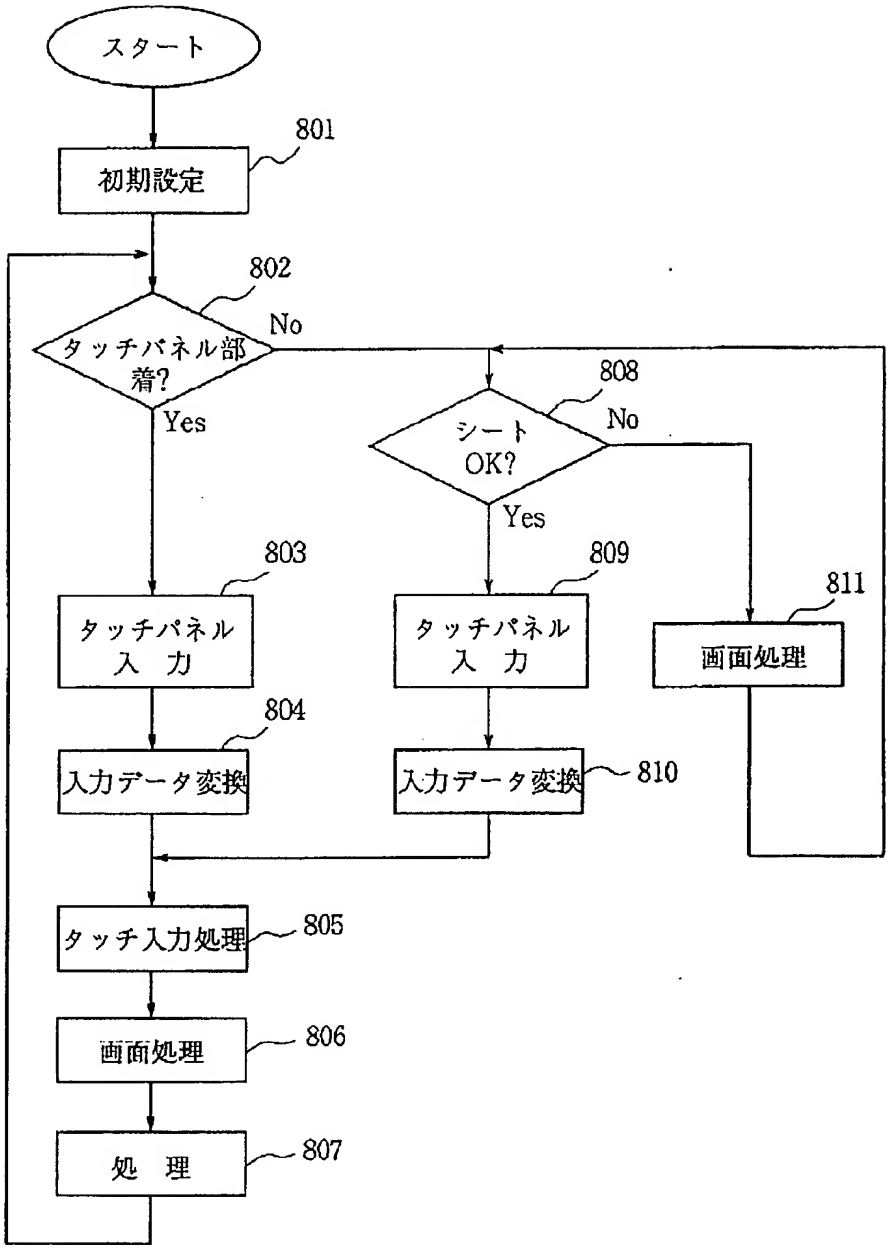


● オーディオ用シート

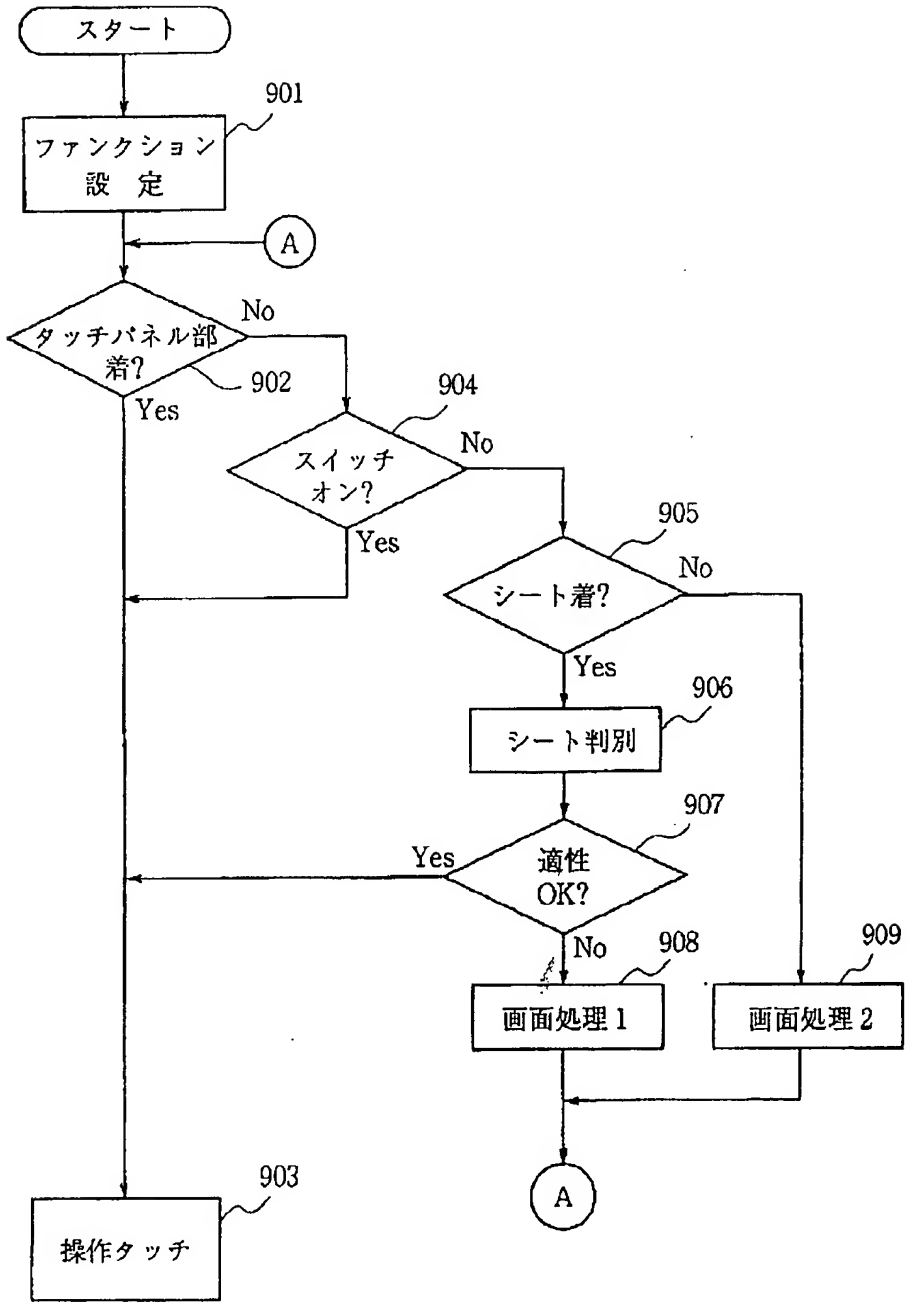
(e)

●シート変更画面

【図8】


スタート
801
初期設定
802
タッチパネル部着?
No
Yes
808
シートOK?
No
Yes
803
タッチパネル入力
809
タッチパネル入力
811
画面処理
804
入力データ変換
入力データ変換
810
タッチ入力処理
805
画面処理
806
処理
807

【図9】



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DERWENT-ACC-NO: 2002-192426

DERWENT-WEEK: 200225

TITLE: Liquid crystal display device has slit provided to design panel for insertion and **removal of touch panel**

PATENT-ASSIGNEE: NIPPONDENSO CO LTD[NPDE]

PRIORITY-DATA: 2000JP-0205534 (July 6, 2000)

PATENT-FAMILY:

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APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
JP2002023952A	N/A	2000JP-0205534	July 6, 2000

INT-CL (IPC): G06F003/033, G09F009/00

ABSTRACTED-PUB-NO: JP2002023952A

BASIC-ABSTRACT:

NOVELTY - A slit (41) is provided to a design panel (40) which covers a panel

guide (50), for insertion and **removal of a touch panel** (20) along a rail (51) provided to the panel guide.

USE - Liquid crystal display device with touch panel.

ADVANTAGE - Touch panel is exchanged easily and electrical connection between touch panel and a control circuit is made simple.

DESCRIPTION OF DRAWING(S) - The figure shows the components of display device.

Touch panel 20

Design panel 40

Slit 41

Panel guide 50

Rail 51

CHOSEN-DRAWING: Dwg.1/4

DERWENT-CLASS: P85 T01 T04

EPI-CODES: T01-C02B1; T04-H03C2;

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号
特開2002－23952
（P2002－23952A）
(43)公開日　平成14年１月25日(2002.1.25)

(51)Int.Cl.⁷		識別記号	FI		テーマコード(参考)
Ｇ０６Ｆ	3/033	３６０	Ｇ０６Ｆ 3/033	３６０Ａ	５Ｂ０８７
Ｇ０９Ｆ	9/00	３６６	Ｇ０９Ｆ 9/00	３６６Ａ	５Ｇ４３５

審査請求　未請求　請求項の数２　ＯＬ　（全４頁）

(21)出願番号　特願2000－205534(P2000－205534)

(22)出願日　平成12年７月６日(2000.7.6)

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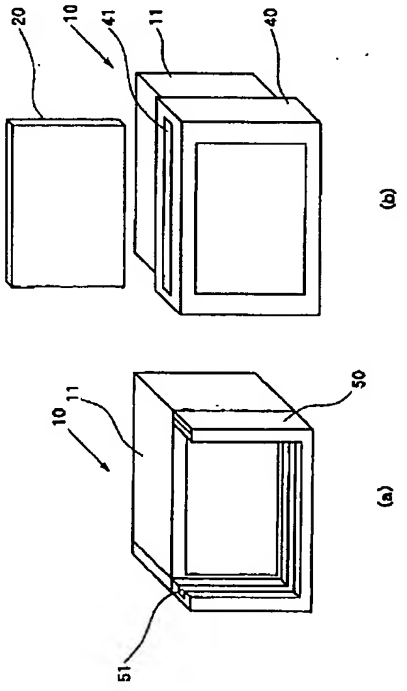
Ｆターム(参考)　5B087 AA00 AB05 CC12 CC24
5G435 AA19 BB12 EE37 EE46 EE49

(54)【発明の名称】　タッチパネル付き表示装置

(57)【要約】
【課題】　タッチパネル付き表示装置において、タッチパネルの交換を容易に行えるようにするとともに、タッチパネルの電極と制御回路との電気接続を容易にする。
【解決手段】　レール５１が設けられた額縁形状のパネルガイド５０が表示パネル１０の前面に取り付けられ、タッチパネル２０がレール５１に沿ってパネルガイド５０内に挿入されている。また、パネルガイド５０を覆うように意匠パネル４０が取り付けられ、意匠パネル４０には、タッチパネル２０の挿入および取り出しができるようにスリット４１が設けられている。また、パネルガイド５０内には、制御回路と電気接続された導電性クリップが設けられており、タッチパネル２０がパネルガイド５０内に挿入されているときにタッチパネル２０の電極と導電性クリップとが電気接続するようになっている。



1

【特許請求の範囲】

【請求項1】　タッチパネル（20）が表示パネル（10）の前面に設けられたタッチパネル付き表示装置において、

前記タッチパネル（20）を挿入案内するレール（51）が設けられた額縁形状のパネルガイド（50）が前記表示パネル（10）の前面に取り付けられ、

前記タッチパネル（20）が前記レール（51）に沿って前記パネルガイド（50）内に挿入されており、

さらに前記パネルガイド（50）を覆うように前記表示パネル（10）に意匠パネル（40）が取り付けられ、

前記意匠パネル（40）には、前記タッチパネル（20）の挿入および取り出しができるようにスリット（41）が設けられていることを特徴とするタッチパネル付き表示装置。

【請求項2】　前記パネルガイド（50）内には、制御回路（12）と電気接続された電気的接続手段（50）が設けられており、前記タッチパネル（20）がパネルガイド（50）内に挿入されているときに前記タッチパネル（20）の電極（22）と前記電気的接続手段（50）とが電気接続するようになっていることを特徴とする請求項1に記載のタッチパネル付き表示装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、タッチパネルが表示パネルの前面に設けられたタッチパネル付き表示装置に関する。

【0002】

【従来の技術】従来、図3（a）に示すように、抵抗膜式のタッチパネル20を表示パネル（例えば、液晶表示パネル）10の前面に取り付ける場合、タッチパネル20を表示パネル10のケース11に両面テープ30で貼り付け固定している。また、タッチパネル20からの電気信号を用いて表示制御を行う制御回路12とタッチパネル20との電気接続には、FPC（フレキシブル　プリント　サーキット）21が使用され、図3（b）の模式的な断面構成に示すように、FPC21が制御回路12のコネクタ13に接続されている。さらに、図4（a）、（b）に示すように、意匠パネル（エスカッション）40がタッチパネル20を覆うように表示パネル10に取り付けられている。

【0003】

【発明が解決しようとする課題】上記した装置において、タッチパネル20の傷や汚れ、あるいは動作不良等のためにタッチパネル20を交換する場合、以下のような問題が生じる。

（1）タッチパネル20を取り外すためには、意匠パネル40を表示パネル10から取り外す必要があり、交換性が悪い。タッチパネル20が両面テープ30で表示パネル10のケース11に貼り付けられているため、タッチパネル20を剥がすのに時間がかかる。

（2）タッチパネル20と制御回路12を電気接続するため、タッチパネル20のFPCを制御回路12のコネクタ13へ挿入、勘合させる必要があり、その組み付け性、交換性が悪い。

【0004】本発明は上記問題に鑑みたもので、タッチパネルの交換を容易に行えるようにすることを第1の目的とする。

【0005】また、タッチパネルの電極と制御回路との電気接続を容易にすることを第2の目的とする。

【0006】

【課題を解決するための手段】上記目的を達成するため、請求項1に記載の発明では、タッチパネル（20）を挿入案内するレール（51）が設けられた額縁形状のパネルガイド（50）が表示パネル（10）の前面に取り付けられ、タッチパネル（20）がレール（51）に沿ってパネルガイド（50）内に挿入されており、さらにパネルガイド（50）を覆うように表示パネル（10）に意匠パネル（40）が取り付けられ、意匠パネル（40）には、タッチパネル（20）の挿入および取り出しができるようにスリット（41）が設けられていることを特徴としている。

【0007】この発明によれば、タッチパネル（20）を交換するときに、意匠パネル40のスリット（41）からタッチパネル（20）を取り出すだけでよいため、タッチパネル（20）の交換を容易に行うことができる。

【0008】請求項2に記載の発明では、パネルガイド（50）内には、制御回路（12）と電気接続された電気的接続手段（50）が設けられており、タッチパネル（20）がパネルガイド（50）内に挿入されているときにタッチパネル（20）の電極（22）と電気的接続手段（50）とが電気接続するようになっていることを特徴としている。

【0009】この発明によれば、タッチパネル（20）をパネルガイド（51）内に挿入するだけで電気的接続手段（50）と電気接続することができるため、タッチパネル（20）の電極（22）と制御回路（12）との電気接続を容易にすることができる。

【0010】なお、上記各手段の括弧内の符号は、後述する実施形態に記載の具体的手段との対応関係を示すものである。

【0011】

【発明の実施の形態】以下、本発明の一実施形態に係るタッチパネル付き表示装置について説明する。なお、図3、図4と同じ符号を付した部分は、同一または均等のものであることを示している。

【0012】図1（a）に示すように、タッチパネル20を挿入案内するレール51が設けられた額縁形状のパネルガイド（例えば、樹脂製のもの）50が両面テープ

等の接着部材によって表示パネル１０のケース１１に貼り付け固定されている。パネルガイド５０の１辺（例えば、図１に示すように上辺）には、パネルガイド５０の挿入を可能にするようにレール５１が開口している。

【００１３】また、表示パネル１０のケース１１にパネルガイド５０を貼り付けた後、図１（ｂ）に示すように、意匠パネル４０がパネルガイド５０を覆うように表示パネル１０に取り付けられる。この意匠パネル４０には、パネルガイド５０へのタッチパネル２０の挿入およびパネルガイド５０からタッチパネル２０の取り出しができるようにスリット４１が設けられている。

【００１４】タッチパネル２０は、意匠パネル４０のスリット４１から、パネルガイド５０のレール５１に沿ってパネルガイド５０内に挿入される。このタッチパネル２０の挿入は、意匠パネル４０を表示パネル１０に取り付ける前に行うようにしてもよい。

【００１５】図２（ａ）に、タッチパネル２０の平面構成を示し、図２（ｂ）に、タッチパネル２０がパネルガイド５０内に挿入された断面構成を示す。タッチパネル２０には、その下端部に電極２２が設けられており、パネルガイド５０内には、タッチパネル２０の電極２２に対応した位置に電気的接続手段をなす導電性クリップ５０が設けられている。この導電性クリップ５０は、制御回路１２と電気接続されている。タッチパネル２０がパネルガイド５０内に挿入されると、図２（ｂ）に示すように、タッチパネル２０の電極２２と導電性クリップ５０が電気接続される。

【００１６】上記した構成によれば、タッチパネル２０を交換するときに、意匠パネル４０のスリット４１から

タッチパネル２０を取り出すだけでよいため、従来のような意匠パネル４０の取り外し、タッチパネル２０の剥がしといった作業が必要なく、タッチパネル２０の交換を容易に行うことができる。

【００１７】また、タッチパネル２０をパネルガイド５０内に挿入するだけで、制御回路１２と電気接続された導電性クリップ５０と電気接続することができるため、従来のようなタッチパネル２０のＦＰＣ２１を制御回路１２のコネクタ１３へ挿入、勘合するといった作業が必要なく、タッチパネル２０の電極２２と制御回路１２との電気接続を容易にすることができる。

【図面の簡単な説明】

【図１】本発明の一実施形態に係るタッチパネル付き表示装置の構成を示す図である。

【図２】（ａ）は図１中のタッチパネル２０の平面構成を示す図であり、（ｂ）はタッチパネル２０をパネルガイド５０内に挿入した状態の断面構成を示す図である。

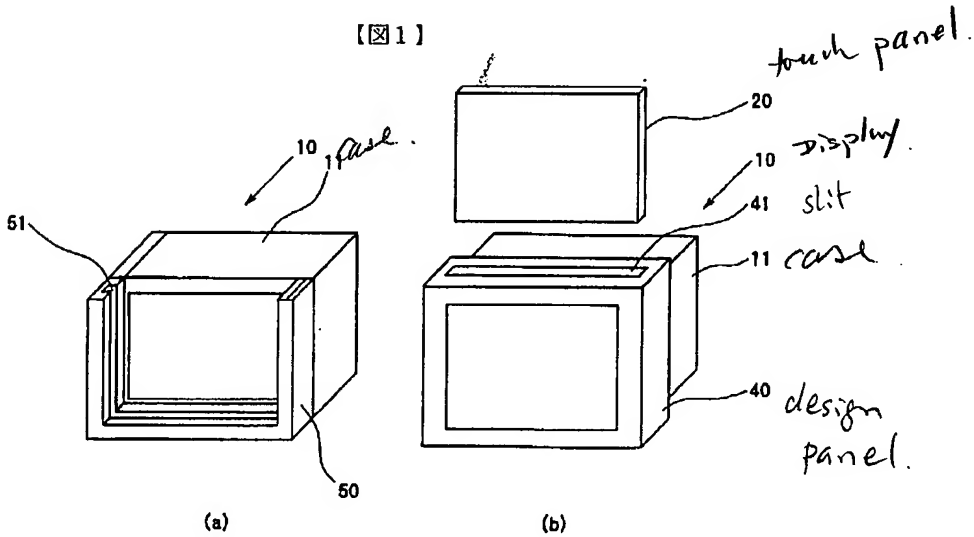
【図３】従来のタッチパネル付き表示装置において、タッチパネル２０を表示パネル１０の前面に取り付けた状態を示す図である。

【図４】従来のタッチパネル付き表示装置において、意匠パネル４０を表示パネル１０に取り付けた状態を示す図である。

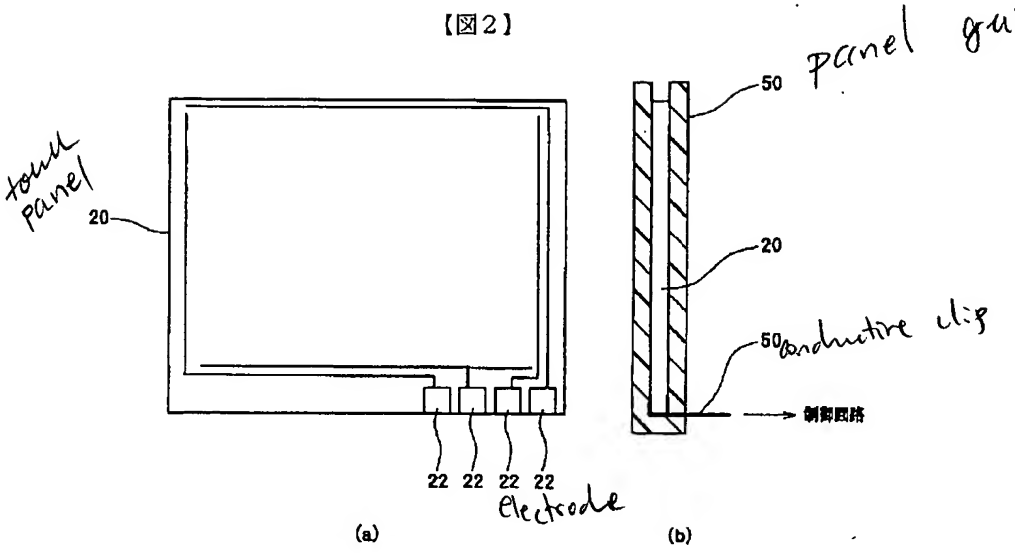
【符号の説明】

１０…表示パネル、１１…ケース、１２…制御回路、２０…タッチパネル、２２…電極、４０…意匠パネル、４１…スリット、５０…パネルガイド、５１…レール、６０…導電性クリップ。

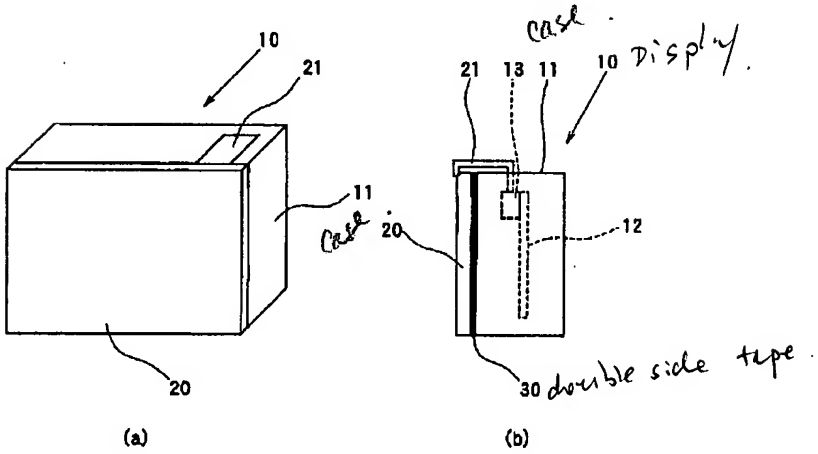
【図１】



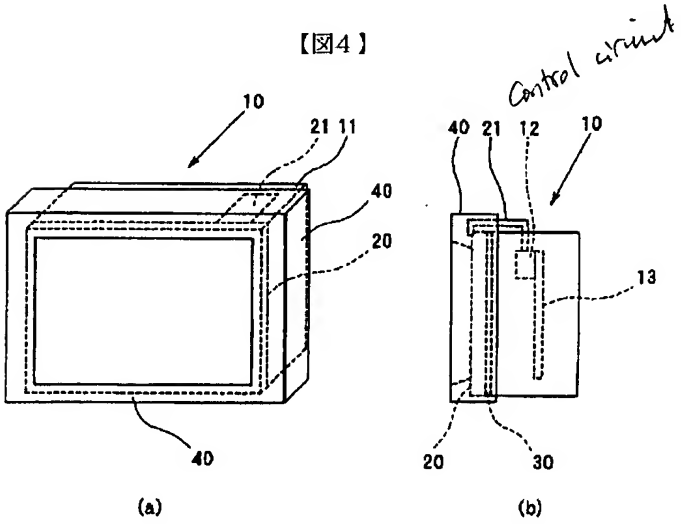
【図2】


touch panel
20
22 22 22 22
electrode
(a)
50
panel guide
20
50
conductive clip
制御回路
(b)

【図3】


10
21
11
case
20
(a)
case
21 13 11
10 Display
12
20
30 double side tape
(b)

【図4】


10
21 11
40
20
40
(a)
Control circuit
40 21 12
10
13
20
30
(b)

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the display with a touch panel with which the touch panel was prepared in the front face of a display panel.
[0002]
[Description of the Prior Art] As conventionally shown in drawing 3 (a), when attaching the touch panel 20 of a resistance film type in the front face of a display panel (for example, liquid crystal display panel) 10, a touch panel 20 is stuck on the case 11 of a display panel 10 with a double-sided tape 30, and it is fixing. Moreover, FPC (flexible print circuit)21 is used for the electrical connection of the control circuit 12 and touch panel 20 which perform a display control using the electrical signal from a touch panel 20, and FPC21 is connected to the connector 13 of a control circuit 12 as shown in the typical cross-section configuration of drawing 3 (b). Furthermore, as shown in drawing 4 (a) and (b), it is attached in the display panel 10 so that the design panel (S KASSHON) 40 may cover a touch panel 20.
[0003]
[Problem(s) to be Solved by the Invention] In the above-mentioned equipment, when exchanging a touch panel 20 for the blemish of a touch panel 20, dirt or a malfunction, etc., the following problems arise.
(1) In order to remove a touch panel 20, it is necessary to remove the design panel 40 from a display panel 10, and convertibility is bad. Since the touch panel 20 is stuck on the case 11 of a display panel 10 with the double-sided tape 30, removing a touch panel 20 takes time amount.
(2) In order to carry out electrical connection of the control circuit 12 to a touch panel 20, it is necessary to insert and to carry out the checking and verifying of FPC of a touch panel 20 to the connector 13 of a control circuit 12, and the attachment nature and convertibility are bad.
[0004] This invention is what took the example by the above-mentioned problem, and let it be the 1st purpose to enable it to exchange touch panels easily.
[0005] Moreover, it sets it as the 2nd purpose to make easy electrical connection of the electrode of a touch panel, and a control circuit.
[0006]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, in invention according to claim 1 The panel guide (50) of a frame configuration with which the rail (51) which carries out insertion guidance of the touch panel (20) was prepared is attached in the front face of a display panel (10). The touch panel (20) is inserted into the panel guide (50) along with the rail (51). A design panel (40) is attached in a display panel (10) so that a panel guide (50) may furthermore be covered, and it is characterized by preparing the slit (41) so that insertion of a touch panel (20) and ejection may be made to a design panel (40).
[0007] Since what is necessary is just according to this invention to take out a touch panel (20) from the slit (41) of the design panel 40 when exchanging touch panels (20), a touch panel (20) is easily exchangeable.
[0008] In invention according to claim 2, when the electrical connecting means (50) by which electrical connection was carried out to the control circuit (12) is established in the panel guide (50) and the touch panel (20) is inserted into the panel guide (50), it is characterized by the electrode (22) and electrical connecting means (50) of a touch panel (20) carrying out electrical connection.
[0009] Since electrical connection can be carried out to an electrical connecting means (50) only by inserting a touch panel (20) into a panel guide (51) according to this invention, the electrode (22) of a touch panel (20) and electrical connection with a control circuit (12) can be made easy.

[0010] In addition, the sign in the parenthesis of each above-mentioned means shows correspondence relation with the concrete means of a publication to the operation gestalt mentioned later.
[0011]
[Embodiment of the Invention] Hereafter, the display with a touch panel concerning 1 operation gestalt of this invention is explained. In addition, it is shown that the part which attached the same sign as drawing 3 R> 3 and drawing 4 is the same or equal.
[0012] As shown in drawing 1 (a), the panel guide (for example, thing made of resin) 50 of a frame configuration with which the rail 51 which carries out insertion guidance of the touch panel 20 was formed is being stuck and fixed to the case 11 of a display panel 10 by jointing material, such as a double-sided tape. The rail 51 is carrying out opening to one side (it is the surface as shown in drawing 1) of the panel guide 50 so that insertion of the panel guide 50 may be enabled.
[0013] Moreover, after sticking the panel guide 50 on the case 11 of a display panel 10, as shown in drawing 1 (b), it is attached in a display panel 10 so that the design panel 40 may cover the panel guide 50. The slit 41 is formed so that ejection of a touch panel 20 may be made to this design panel 40 from the insertion and the panel guide 50 of a touch panel 20 to the panel guide 50.
[0014] A touch panel 20 is inserted into the panel guide 50 along with the rail 51 of the panel guide 50 from the slit 41 of the design panel 40. Before attaching the design panel 40 in a display panel 10, it may be made to perform insertion of this touch panel 20.
[0015] The cross-section configuration which shows the flat-surface configuration of a touch panel 20 to drawing 2 (a) and by which the touch panel 20 was inserted in it into the panel guide 50 at drawing 2 (b) is shown. The electrode 22 is formed in the lower limit section, and the conductive clip 50 which makes an electrical connecting means is formed in the location corresponding to the electrode 22 of a touch panel 20 in the panel guide 50 at the touch panel 20. Electrical connection of this conductive clip 50 is carried out to the control circuit 12. If a touch panel 20 is inserted into the panel guide 50, as shown in drawing 2 (b), electrical connection of the electrode 22 and the conductive clip 50 of a touch panel 20 will be carried out.
[0016] Since what is necessary is just according to the above-mentioned configuration to take out a touch panel 20 from the slit 41 of the design panel 40 when exchanging a touch panel 20, removal of a design panel 40 like before and a touch panel 20 remove, and a ******** activity is unnecessary and can exchange a touch panel 20 easily.
[0017] Moreover, only by inserting a touch panel 20 into the panel guide 50, since electrical connection can be carried out to the conductive clip 50 by which electrical connection was carried out to the control circuit 12, insertion and the activity of carrying out checking and verifying are unnecessary to the connector 13 of a control circuit 12 in FPC21 of a touch panel 20 like before, and electrical connection of the electrode 22 of a touch panel 20 and a control circuit 12 can be made easy.

[Translation done.]

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TITLE: INPUT TABLET

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ABSTRACT:

PROBLEM TO BE SOLVED: To provide an inexpensive input tablet of a variety of sizes, to permit its fitting to a narrower screen frame and to make its attachment/detachment easier by providing a support

body of an independently,
portable and flexible transparent plate which
directly and freely
attachably/**detachably fixes a transparent touch panel** on a display or a desk
and a thin type fixing member.

SOLUTION: An input tablet (an input part) 12 is composed of a transparent
touch panel main body 1 having a detection part 1a of almost the same size of
the screen of a general purpose liquid crystal display, a transparent support
body 2 fixing the touch panel main body and thin type fixing member 3 installed
on the back surface of the support body 2. The full surface of this touch
panel main body 1 is actually adhered on a touch panel sticking part of the
support body 2 by an adhesive material, an adhesive tape or the like. Then,
the thin fixing member 3, for example, a mating surface fastener, a magic tape
or the like, is fitted to the back surface of the input part 12 and a position
corresponding to it on a display side, and these are stuck together for fixing.

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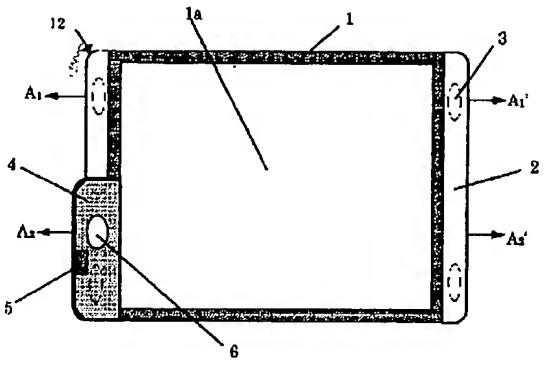
(54)【発明の名称】　タブレット入力装置

(57)【要約】
【課題】　一般にパソコン等の画面を押圧して操作する用途はかなり特殊なものであるため、現在商品化されているタッチパネル付きモニターはかなり高価なものが多いのが現状である。そのため手ごろな価格で購入でき、ディスプレイに取付けるだけで簡単に面上操作が可能なものが求められている。
【解決手段】　平面形状の透明タッチパネルを備え、同タッチパネルをディスプレイ上又は机上に直接着脱自在に固定可能とする独立可搬で透明な平板状の支持体と、支持体背面の外周部に貼り付けられる薄手の固定用部材とを備えることを特徴とする。



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【特許請求の範囲】
【請求項１】平面形状の透明タッチパネルを備え、同タッチパネルをディスプレイ上又は机上に直接着脱自在に固定可能とする独立可搬で透明な平板状の支持体と、支持体背面の外周部に貼り付けられる薄手の固定用部材とを備えることを特徴とするタブレット入力装置。
【請求項２】前記支持体は、ディスプレイ画面の外周枠内寸法に合わせた凸部を有し、固定される際には支持体の凸部がディスプレイ画面の外周枠内に嵌め込まれ、ディスプレイ画面の位置精度を保証することを可能とする請求項１に記載のタブレット入力装置。
【請求項３】前記机上に直接載置するために支持体の背面の外周部に枠体を設けた請求項１に記載のタブレット入力装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明はノートパソコンや液晶モニターなどに接続されるタブレット入力装置に関する。
【０００２】
【従来の技術】従来から、パソコンやワープロへの図形データ等のデータを入力する装置としてタブレット入力装置（ディジタイザーを含む）が用いられている。このようなタブレット入力装置では、例えば、タッチパネル等の入力部を指やペン等で触れることによって、その押圧位置を検出しパソコン等に出力するように構成されている。また最近ではパソコンなどと別置し横に置いた状態で使うタブレット入力装置だけでなく、タッチパネルをディスプレイに組み込んだり、ディスプレイの前面に組み付けることで、画面の表示に基づき所定の位置を押圧して操作できるもの等が商品化されている。
【０００３】
【発明が解決しようとする課題】一般にパソコン等の画面を押圧して操作する用途はかなり特殊なものであるため、現在商品化されているタッチパネル付きモニターはかなり高価なものが多いのが現状である。そのため手ごろな価格で購入でき、ディスプレイに取付けるだけで簡単に面上操作が可能なものが求められている。
【０００４】一方、液晶モニター等の急速な大画面化により、現在使用されている画面サイズが多様化し、全ての画面サイズに対応出来るタブレット入力装置は製作し難くいのが実情である。更にノートパソコンの場合等では、有効入力部の大画面化に伴い画面の外枠の幅が狭くなり画面の前面に装着し難くなっている。また装着した状態で蓋を閉めることを可能とする構成は困難なため、簡易な脱着方法が求められている。
【０００５】そこで本願発明は、比較的低価格で多様なサイズに容易に対応して製作することが可能であり、幅の狭い画面枠にも装着でき、また脱着が容易でしかも装着した状態の見栄えがシンプルな固定方法を備えるブレット入力装置を提供することを目的とする。

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【０００６】
【課題を解決するための手段】上記目的を達成するため本願発明のタブレット入力装置は、平面形状の透明タッチパネルを備え、同タッチパネルをディスプレイ上又は机上に直接着脱自在に固定可能とする独立可搬で透明な平板状の支持体と、支持体背面の外周部に貼り付けられる薄手の固定用部材とを備えることを特徴とする。
【０００７】また前記支持体は、ディスプレイ画面の外周枠内寸法に合わせた凸部を有し、固定される際には支持体の凸部がディスプレイ画面の外周枠に嵌め込まれ、位置精度の保証を可能とし、前記資料の上に直接載置するために支持体の背面の外周部に枠体を設けることを特徴とする。
【０００８】
【発明実施の形態】以下本発明を詳細に説明する。本発明に用いられる透明タッチパネルとしては、抵抗膜式のアナログ方式が最も望ましい。しかし用途に応じ抵抗膜式に限らず光学式、電磁誘導式、超音波式なども用いられることは可能である。抵抗膜式であってもアナログ方式のみでなくマトリックスタイプであっても使用可能である。
【０００９】前記支持体は透明な平板であり、指又はペン入力による押圧力がディスプレイの表面に伝達しない強度を有し、ディスプレイの画面或いは資料の画像が鮮明に透視できる透明さを有することが望ましい。
【００１０】支持板の寸法は、適宜選定すれば良いが、特にディスプレイと組合せる場合はその寸法に合わせ、出来る限り小さい寸法にすることが望ましい。背面に取り付ける固定用部材の位置は、対向する２辺部にまとめることが望ましく、図２に示すようなロック或いはストッパー等を避けて寸法を小さくすることが可能となる。
【００１１】支持板の背面に設ける凸部は、平板の裏面に所定寸法の第２の平板を貼り合わせて形成しても良いし、所定の寸法を有する枠体のみを平板の背面に貼り付けて形成したものでも良い。枠体の場合は、透明タッチパネルの透明度に与える影響がより小さいので望ましい。
【００１２】固定用部材は、充分な保持力があり脱着が容易で、脱着を繰り返してもほとんど保持力は低下しないという条件を満たし、貼りあわせて止着する薄手の固定用部材であれば使用可能であり、例えばのメイティング・サーフィス・ファスナー（３M社製）やマジックテープ（登録商標）、マグネットシートなどが用いられる。
【００１３】前記枠体は、支持体の背面が直接机や資料の上に接触しないように取り付けるものであり、支持体の外周に適宜の寸法で設ければ良い。支持体の背面に出っ張りを有する場合は、その厚み（高さ）寸法よりも若干大きな寸法にすることにより、支持体の背面と机等の表面との間に隙間を設けるので、傷がついたりすること

が無くなるので望ましい。

【0014】

【実施例】図1は、本発明のタブレット入力装置を汎用液晶ディスプレイと組合せた場合を示す正面図である。同図に示すようにタブレット入力装置（以後入力部と書く）12は、汎用液晶ディスプレイの画面と略等サイズの検出部1aをもつ透明なタッチパネル本体1とそれを固定する透明な支持体2、そしてその支持体2の背面にとりつけられた薄手の固定用部材3を備えた構成からなる。

【0015】タブレット入力装置12は、図2に示すように液晶ディスプレイ8の前面に装着して画面操作を行ったり、また図6に示すようなディスプレイ8周辺の机上に直接載置してペン入力をしたりするなど二通りの使用方法が可能である。

【0016】前記支持体2は、図1に示すように液晶ディスプレイ8の全体を覆うような寸法に作成せず、支持体2のサイズを縦方向はタッチパネル本体1と等しく、横方向は固定用部材3や保護カバー4などを取り付けるのに最小限必要な寸法にすることで、同サイズが小さく抑えられ、図2のように画面サイズの大きなノートパソコン8の狭い画面枠の場合でもロック8aやストッパー8bに引っかかることなく装着できる。

【0017】また各サイズへ対応して製作する場合も、変更必要な寸法はタッチパネル本体1と支持体2の設計のみであるため、比較的容易に低コストで可能になる。タッチパネル本体1のサイズは、ノート型パソコン等の汎用ディスプレイと同サイズ、例えば対角線長が12.1インチのサイズとしてある。タッチパネル本体1は公知のアナログ抵抗膜式のタッチパネルでその構成と検出原理は特開平10-111748号等に詳しく、既に公知なのでこれ以上の説明は省略する。

【0018】図3又は図4に示すように、前記タッチパネル本体1は実際には支持体2のタッチパネル貼り付け部2aの上に接着剤や粘着テープ等で全面接着される。またタッチパネル本体1の配線部分は例えば着色テープや印刷などで表から見えないような加工を行う。

【0019】前記支持体2の背面のタッチパネル検出部1aに対応した位置には、図3又は図4に示すようなディスプレイ画面の外周枠内寸法と略等サイズの凸部（出っ張り）2bが設けられている。そのため装着すると出っ張り2bがディスプレイ画面の外周枠内にはまり、使用時にタッチパネル検出部1aがディスプレイ画面からずれてしまうことを防ぐことができる。

【0020】また装着した際には、通常タッチパネル本体1の押し位置とカーソル位置を合せる設定（以後キャリブレーションと書く）が必要になるが、出っ張り2bをディスプレイ画面の外周枠内にはめることで、再装着の際にキャリブレーションを行う必要がなくなる。

【0021】図1及び図4に示すようにタブレット入力装置12の左下側に隆起した形の保護カバー4が付いており、その表面には押しボタンスイッチ5が設けられ、またコントローラ回路との接続するための接続口6aが開設されている。この保護カバー4の中にはタッチパネル本体1及び押しボタンスイッチ5とコントローラ回路（不図示）を電気的に接続させるためのコネクタ部回路7が内蔵されている。

【0022】図1のタッチパネル検出部1aをタッチすることにより、通常のパソコンにおけるマウスの左クリックされたのと同様の動作をする。そしてボタンスイッチ5はマウスの右クリックボタンに相当し、押しボタンスイッチ5のみを押して再び離した時、またはこれを押した状態でタッチパネル検出部1aをタッチした時に、マウスの右クリックをしたのと同様の動作をする。

【0023】図5に入力装置12とノートパソコン8の接続方法例を示す。入力部12とコントローラボックス10は、ケーブル9を介して脱着可能なコネクタ6bを接続口6aに差し込むことで接続される。そしてコントローラボックス10のRS232Cコネクタをノートパソコン8の通信ポート8Cに差し込むことで、入力装置12とノートパソコン8とは接続される。

【0024】コントローラボックス10は、パソコン8からRS232Cコネクタを介して必要な駆動電圧を得、タッチパネル本体1からの検出信号（アナログ信号）及び押しボタン5のON／OFF信号をディジタル化しRS232Cを通じてパソコン8へ送出する機能を果たしている。

【0025】コントローラボックス10とパソコン8との通信に必要な通信データフォーマットやデバイスドライバについては、特開平10-111748号に詳しく、既に公知なのでこれ以上の説明は省略する。

【0026】図2に示されているようにディスプレイの前に入力装置12を装着して使用するためには、十分な保持力があり、脱着が容易で、脱着を繰り返してもほとんど保持力は低下しないという条件を満たしている貼りあわせて止着する薄手の固定用部材3、例えばのメイティング・サーフィス・ファスナー（3M社製）やマジックテープ、マグネットシートなどを、図1に示すように入力部12の背面に取り付け、ディスプレイ側にもそれに対応した位置に取り付けてそれらを貼合せて固定を行う。またこの時ディスプレイ側の固定用部材3も十分薄いものを採用するので、ノートパソコンのディスプレイ周部に固定用部材3を取り付けた状態で蓋を閉めることは可能である。

【0027】また前記固定用部材3を入力部12に貼り付けるため、図3に示すように支持体2aの背面に固定用部材の勘合時の厚みとほぼ同じ大きさの彫り込み3aを作ってそこに貼る。固定用部材を貼り合わせた際に支持体2aの背面がほぼディスプレイ枠に接して隙間が発生しない。

【００２８】図６に入力部１２をパソコン８の横で机上に載置して使用する例を示す。図６では図形の書かれた紙面上に入力部１２を載置して、透明なタッチパネルの検出部１ａから見えるその図形をなぞってパソコンに入力している状態を示している。このような使用をする場合、直接入力部１２を机の上に置くと底にキズが付く可能性がある。そこで図７に示すような枠体１１を取り付ける。この枠体１１にはディスプレイと略等サイズの開口１１ａが設けられており、その厚さは支持体２の出っ張り部２ｂの厚さより若干大きくしている。また正確に固定するために、枠体１１に入力部１２側と対応した位置に固定用部材３を取り付けてあり、それらを貼り合せる。また使用時には例えば図６のように紙面上に置いて描くのだが、図７に示すように枠体の下面に滑り止めゴム１１ｂが設けられており、多少手荒く操作しても紙面上を移動することはない。

【００２９】

【発明の効果】以上述べたように本発明のタブレット入力装置の入力部はタッチパネル本体とその支持体、そして背面の固定用部材を備える構成とされているため、最小限の大きさにすることが可能なので、近年の急速なノートパソコンのディスプレイの大画面化に対応することが容易に可能である。即ちさまざまなサイズや機種への対応は、タッチパネル本体と支持体の寸法設計のみで可能なため、商品の多様化とコストダウンにもつながり、これまで以上の広範なユーザ層への普及が期待できる。

【００３０】そして支持体の出っ張りを画面枠にはめ込むことで、使用中のずれをなくし、再装着の際の位置合わせ設定が不要になり、またメイティング･サーフィス･ファスナーなどを用いることによって脱着し易くなり、より使い勝手の良く、しかも装着した状態の見栄えがシンプルなものになる。

【図面の簡単な説明】

【図１】本発明のタブレット入力装置の形態を示す正面図

【図２】タブレット入力装置をノートパソコンのディスプレイ前に装着した説明図

【図３】図１のＡ１－Ａ１’断面図

【図４】図１のＡ２－Ａ２’断面図

【図５】タブレット入力装置とノートパソコンの接続方法説明図

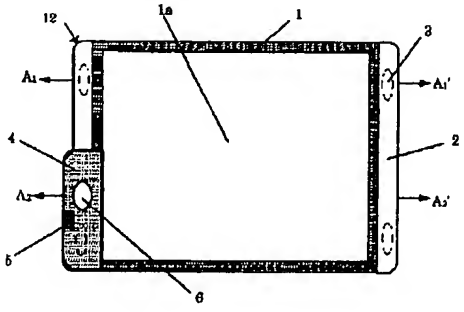
【図６】タブレット入力装置をパソコンの横に載置しての使用説明図

【図７】タブレット入力装置をパソコンの横に載置して使用する際に使用する枠体の説明図

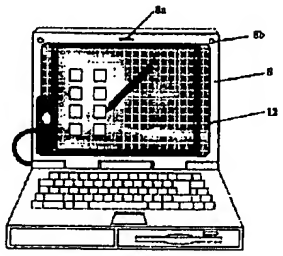
【符号の説明】

1　タッチパネル本体
1a　タッチパネルの検出部
2　支持体
2a　タッチパネル貼り付け部
2b　出っ張り部
3　固定用部材
3a　彫り込み
4　コネクタ部保護カバー
5　押しボタン
6a　接続口
6b　コネクター
7　コネクタ部回路
8　ノートパソコン
8a　ロック
8b　ストッパー
8c　通信ポート
9　ケーブル
10　コントローラボックス
11　枠体
11a　開口
11b　滑り止めのゴム

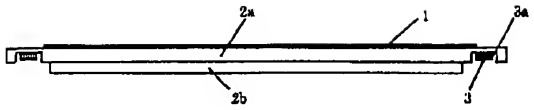
【図１】



【図２】



【図3】



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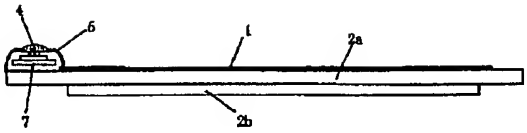

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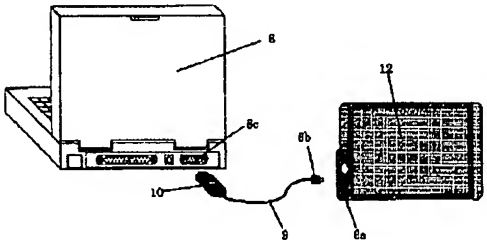

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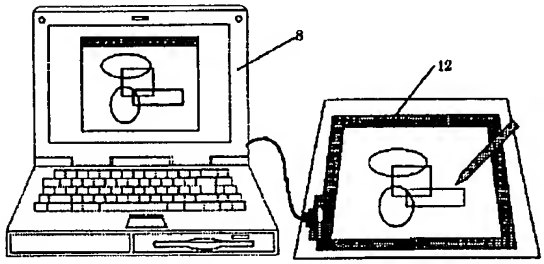
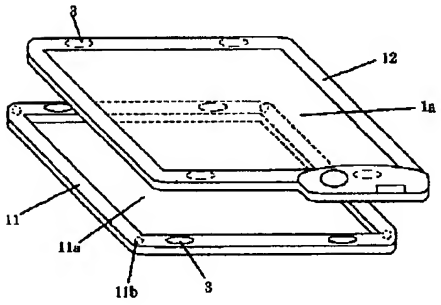


【図7】



* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the tablet input unit connected to a notebook computer, a liquid crystal display monitor, etc.
[0002]
[Description of the Prior Art] The tablet input device (a digitizer is included) is used as equipment which inputs data, such as graphic data from the former to a personal computer and a word processor. For example by touching the input sections, such as a touch panel, with a finger, a pen, etc., it consists of such tablet input devices so that the press location may be detected and it may output to a personal computer etc. Moreover, recently, not only the tablet input device used in the condition of having carried out the separate type to the personal computer etc., and having placed horizontally but a touch panel is built into a display, or what can press and operate a position by attaching to the front face of a display based on the display of a screen is commercialized.
[0003]
[Problem(s) to be Solved by the Invention] Since the application which generally presses and operates screens, such as a personal computer, is quite special, as for the present condition, there are many quite expensive things among the monitors with a touch panel by which current commercialization is carried out. Therefore, it can purchase at a handy price and the thing in which actuation on a field is simply possible is called for only by attaching in a display.
[0004] That which cannot manufacture easily the tablet input unit which the screen size by which current use is carried out is diversified, and can respond to all screen sizes by rapid big screen-ization of a liquid crystal display monitor etc. on the other hand, and is is the actual condition. Furthermore, the width of face of the outer frame of a screen becomes narrow with big-screen-izing of the effective input section, and it has been hard coming to equip the front face of a screen in the case of a notebook computer. Moreover, since the configuration which makes it possible to shut a lid in the condition of having equipped is difficult, the simple desorption approach is searched for.
[0005] Then, it corresponds to sizes comparatively various at a low price easily, the invention in this application can be manufactured, a screen frame with narrow width of face can also be equipped with it, and it is easy desorption and aims at offering the bullet input unit with which the appearance in the condition of moreover having equipped is equipped with the simple fixed approach.
[0006]
[Means for Solving the Problem] In order to attain the above-mentioned purpose , the tablet input device of the invention in this application is characterize by have the transparence touch panel of a flat surface configuration , and have a transparent plate-like base material and the thin member for immobilization stick on the periphery section on the tooth back of a base material by the independent portability which enables immobilization of this touch panel free [direct attachment and detachment] on a display or a desk .
[0007] Moreover, said base material is characterized by preparing a frame in the periphery section of the tooth back of a base material, in order that it has the heights doubled with the periphery within the limit dimension of a display screen, and the heights of a base material may be inserted in the periphery frame of a display screen, may enable a guarantee of location precision and may lay directly on said data, in case it is fixed.
[0008]
[The gestalt of invention implementation] This invention is explained to a detail below. As a transparence touch panel used for this invention, the analog form of a resistance film type is the most desirable. However, it is possible for not only a resistance film type but optical, electromagnetic guidance, an ultrasonic type, etc. to be used according to an application. It is usable, even if it is a resistance film type and is not only an analog form but a matrix type.

[0009] It is monotonous and, as for said base material, it is desirable to have the reinforcement which a transparent finger or the thrust by the pen input does not transmit on the surface of a display, and to have the transparency which the image of a scope or data can see through vividly.
[0010] Although what is necessary is just to select the dimension of a support plate suitably, it is desirable to double with the dimension, when combining especially with a display, and to make it the smallest possible dimension. The location of the member for immobilization attached in a tooth back becomes collecting into the two-side section which counters is desirable, and possible [avoiding a lock or a stopper as shows drawing 2 etc., and making a dimension small].
[0011] What stuck and formed in the monotonous tooth back only the frame which sticks the 2nd plate of a predetermined dimension on a monotonous rear face, may form it in it, and has a predetermined dimension is sufficient as the heights prepared in the tooth back of a support plate. In the case of a frame, since the effect which it has on the transparency of a transparence touch panel is more small, it is desirable.
[0012] If it is the thin member for immobilization which the member for immobilization has sufficient holding power, fulfills the conditions that holding power hardly declines even if desorption is easy and repeats desorption, sticks and unites, and is attached firmly, it is usable, and it compares, and the mating sir FISU fastener (3 M company make) and piece of Velcro (trademark) of **, a magnet sheet, etc. are used.
[0013] What is necessary is to attach said frame so that the tooth back of a base material may not contact on a direct desk or data, and just to prepare it in the periphery of a base material with a proper dimension. Since it is lost that it is sufficient for a blemish just and it carries out since a clearance is prepared between the tooth back of a base material and front faces, such as a desk, by making it a bigger dimension a little than the thickness (height) dimension when it has a lug at the tooth back of a base material, it is desirable.
[0014]
[Example] Drawing 1 is the front view showing the case where the tablet input device of this invention is combined with a general-purpose liquid crystal display. As shown in this drawing, the tablet input device (it is henceforth written as the input section) 12 consists of a configuration equipped with the screen of a general-purpose liquid crystal display, the body 1 of a transparent touch panel with detecting-element 1a of sizes, such as abbreviation, the transparent base material 2 that fixes it, and the thin member 3 for immobilization attached for the tooth back of the base material 2.
[0015] Two kinds of operation, such as performing menu manipulation, and laying directly on the desk of the display 8 circumference as are shown in drawing 2 , and equipped the front face of a liquid crystal display 8 with and shown in drawing 6 , and carrying out a pen input, is possible for the tablet input device 12.
[0016] said base material 2 is shown in drawing 1 -- as -- the whole of a liquid crystal display 8 -- a wrap -- do not create in a dimension [like], but a lengthwise direction is equal to the body 1 of a touch panel in the size of a base material 2, and a longitudinal direction attaches the member 3 for immobilization, a protective cover 4, etc. -- the minimum -- it can equip by making it a required dimension, without stopping the same size small and catching it in lock 8a or stopper 8b like drawing 2 also in the case of the narrow screen frame of the notebook computer 8 with a big screen size.
[0017] moreover, the case where it corresponds and manufactures to each size -- modification -- since a required dimension is only the design of the body 1 of a touch panel, and a base material 2, it becomes possible by low cost comparatively easily. As for the size of the body 1 of a touch panel, the general-purpose display of a notebook sized personal computer etc. and the same size, for example, diagonal line length, are made into the size of 12.1 inches. By the touch panel of a well-known analog resistance film type, the body 1 of a touch panel of the configuration and detection principle is detailed to JP,10-111748,A etc., and since it is well-known, it already omits the explanation beyond this.
[0018] As shown in drawing 3 or drawing 4 , said body 1 of a touch panel is completely pasted up with adhesives, adhesive tape, etc. on touch panel attachment section 2a of a base material 2 in fact. Moreover, the wiring part of the body 1 of a touch panel performs processing which is in sight from a table neither by for example, the coloring tape nor printing.
[0019] Heights (lug) 2b of sizes, such as a periphery within the limit dimension of a display screen, abbreviation, etc. as shown in drawing 3 or drawing 4 , is prepared in the location corresponding to touch panel detecting-element 1a of the tooth back of said base material 2. Therefore, if it equips, it protrudes and 2b can prevent touch panel detecting-element 1a shifting from a display screen within the periphery limit of a display screen at the time of a ball and use.
[0020] Although a setup (it is henceforth written as a calibration) which usually doubles the push location and cursor

location of the body 1 of a touch panel is needed when it equips, it becomes unnecessary moreover, to perform a calibration by inserting in lug 2b within the periphery limit of a display screen in the case of re-wearing.
[0021] As shown in drawing 1 and drawing 4 , the formal protective cover 4 which upheaved to the lower left side of the tablet input device 12 is attached, a pushbutton switch 5 is formed in the front face, and end-connection 6a for [with a controller circuit] connecting is established. In this protective cover 4, the connector area circuit 7 for connecting a controller circuit (un-illustrating) to the body 1 of a touch panel and a pushbutton switch 5 electrically is built in.
[0022] By touching touch panel detecting-element 1a of drawing 1 , actuation same with the mouse in the usual personal computer having been left-clicked is carried out. And a button switch 5 is equivalent to the right-click carbon button of a mouse, and when only a pushbutton switch 5 is pushed and is detached again, or when [where this is pushed,] touch panel detecting-element 1a is touched, it carries out actuation same with having right-clicked the mouse.
[0023] The example of a connection method of an input unit 12 and a notebook computer 8 is shown in drawing 5 . The input section 12 and the controller box 10 are connected by inserting in end-connection 6a connector 6b in which desorption is possible through a cable 9. And by inserting the RS232C connector of the controller box 10 in communication link port 8C of a notebook computer 8, an input unit 12 and a notebook computer 8 are connected.
[0024] The controller box 10 obtained required driver voltage from the personal computer 8 through the RS232C connector, and has achieved the function which the detecting signal (analog signal) from the body 1 of a touch panel and the ON/OFF signal of a push button 5 are digitized, and is sent out to a personal computer 8 through RS232C.
[0025] About a communication link data format and a device driver required for the communication link with the controller box 10 and a personal computer 8, it is detailed to JP,10-111748,A, and since it is well-known, the explanation beyond this is already omitted.
[0026] In order to use it in front of a display, equipping with an input unit 12 as shown in drawing 2 It compares. the thin member 3 for immobilization which fulfills the conditions that there is sufficient holding power, and holding power hardly declines even if desorption is easy and repeats desorption and which is stuck, united and attached firmly -- the mating sir FISU fastener (3 M company make) and piece of Velcro of **, a magnet sheet, etc. As shown in drawing 1 , it attaches in the tooth back of the input section 12, and it attaches in the location corresponding to it, and lamination ****** is performed for them also to a display side. Moreover, since what also has the sufficiently thin member 3 for immobilization by the side of a display is adopted at this time, it is possible to shut a lid to the display periphery of a notebook computer, where the member 3 for immobilization is attached.
[0027] Moreover, in order to stick said member 3 for immobilization on the input section 12, as shown in drawing 3 , the almost same magnitude as the thickness at the time of the checking and verifying of the member for immobilization engraves the tooth back of base material 2a, lump 3a is made, and it sticks there. When sticking the member for immobilization, in contact with a display frame, a clearance does not occur [the tooth back of base material 2a] mostly.
[0028] The example which uses the input section 12 for drawing 6 on a desk by side of a personal computer 8, laying it is shown. By drawing 6 , the input section 12 is laid on the space to which the graphic form was written, and the condition of having traced the graphic form which appears from detecting-element 1a of a transparent touch panel, and having inputted into the personal computer is shown. When carrying out such use, if the direct-input section 12 is placed on a desk, a crack may be attached to a bottom. Then, the frame 11 as shown in drawing 7 is attached. Opening 11a of sizes, such as a display and abbreviation, is prepared in this frame 11, and that thickness is enlarged a little from the thickness of lug section 2b of a base material 2. Moreover, since it fixes correctly, the member 3 for immobilization is attached in the location corresponding to a frame 11 the input section 12 side, and they are stuck. Moreover, although placed and drawn on space like drawing 6 at the time of use, even if skid rubber 11b is prepared in the inferior surface of tongue of a frame as shown in drawing 7 , and it operates some roughly, it does not move in a space top.
[0029]
[Effect of the Invention] Since the input section of the tablet input device of this invention is considered as the configuration equipped with the body of a touch panel, its base material, and the member for immobilization on the back as stated above and it is possible to make it the minimum magnitude, it is easily possible to deal with big screen-ization of the display of a rapid notebook computer in recent years. That is, only in the dimension design of the body of a touch panel, and a base material, since the correspondence to various sizes and models is possible, it leads also to diversification and a cost cut of goods, and it can expect spread in the extensive user layer more than the former.

[0030] And by losing a gap in use, and an alignment setup in the case of re-wearing becoming unnecessary, and using a mating sir FISU fastener etc. by inserting the lug of a base material in a screen frame, it becomes easy to carry out desorption, and it is more user-friendly and the appearance in the condition of moreover having equipped will become simple.

[Translation done.]

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